



March 14, 2007  
696/CAL-4067

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**Subject: Docket No. 70-734; SNM-696: Request to Release a Certain Portion of General Atomics' Facility to Unrestricted Use and Delete it from License SNM-696: Namely, GA's "Section C of the Building 2 Service Corridor"**

and

Dr. Ron Rogus (In Duplicate)  
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**Subject: Radioactive Materials License No. 0145-37: Request to Release a Certain Portion of General Atomics' Facility to Unrestricted Use and Delete it from License 0145-37: Namely, GA's "Section C of the Building 2 Service Corridor"**

Dear Mr. Baker and Dr. Rogus:

As you are aware, General Atomics (GA) is continuing its efforts directed at obtaining the release to unrestricted use of selected facilities and land areas at General Atomics. GA has recently completed the final radiological surveys of Section C of the Service Corridor of its Building 2 (Science Laboratories Building), located on GA's Main Site.

GA's Building 2 contains approximately 142 laboratories, plus offices, hallways, and a service corridor which houses the utilities, heating, and A/C, etc. for the labs and offices. During the past ~ 50 years, the laboratories were used primarily for research and development activities involving the use of radioactive material.

All of the laboratories within Building 2 have been released to unrestricted use by the U.S. Nuclear Regulatory Commission (NRC) and all but a few have also been released by the State of California DHS Radiologic Health Branch (State). None of the laboratories in Building 2, or the projects occupying them, are authorized to use or store radioactive material in the service corridor, nor is such authorization anticipated in the future.

Building 2 is comprised of three arc-shaped sections which together form a "C"-shaped semi-circular building. The three sections are referred to as Sections A, B and C. Due to the large size and complexity of Building 2, the service corridor in each of the three sections is the subject of a separate release request. GA has previously requested the release of Sections A and B (References 1 and 2, respectively). This release request addresses the service corridor in **Section C**.

The service corridor in Section C occupies a total of approximately 9,496 ft<sup>2</sup> (~877 m<sup>2</sup>), which includes three levels and a number of side rooms and ventilation rooms connected to, and accessible from, the service corridor. In the past, contaminated equipment and radioactive materials or waste were, on occasion, temporarily stored in portions of the service corridor, resulting in low levels of radioactive contamination in certain localized areas.

The results of analyses of characterization samples indicated U-235, U-238, and Cs-137 were the contaminants. Appropriate decontamination activities were conducted in Section C until residual radiation levels were well below the approved release criteria specified in GA's NRC- and State-approved Site Decommissioning Plan.

The enclosed report documents the results of GA's comprehensive radiological measurements and surveys conducted within Section C of the Building 2 Service Corridor. The results of these surveys demonstrate that the service corridor in "Section C" meets the NRC- and State- approved criteria for release to unrestricted use.

Accordingly, GA hereby requests the NRC and the State to release the Service Corridor in Section C of GA's Building 2, as described in the enclosed report, to unrestricted use and to delete it from GA's NRC and State special nuclear material and radioactive material licenses, respectively.

Consistent with decisions made during joint NRC, State, and GA decommissioning coordination meetings, the NRC has the regulatory lead for the release of the Building 2 Service Corridor to unrestricted use. Moreover, in response to a request by GA, the NRC has already performed confirmatory surveys in Section C of the Building 2 Service Corridor on the basis of a "substantial" draft final survey report.

If you should have any questions regarding this request, or the enclosed report, please don't hesitate to contact Ms. Laura Q. Gonzales at (858) 455-2758 or [laura.gonzales@gat.com](mailto:laura.gonzales@gat.com), or me at (858) 455-2823 or [keith.asmussen@gat.com](mailto:keith.asmussen@gat.com).

Very truly yours,



Keith E. Asmussen, Ph.D., Director  
Licensing, Safety and Nuclear Compliance

Enclosure: GA report titled "Final Radiological Survey Report for Section C of the Building 2 (Science Laboratories Building) Service Corridor," dated March 2007.

References: 1) Asmussen, Keith E. letter no. 696/CAL-4044 to Mr. Merrit N. Baker and Dr. Ron Rogus, dated December 6, 2006. [Request to release "Section A of the Building 2 Service Corridor"]

2) Asmussen, Keith E. letter no. 696/CAL-4064 to Mr. Merrit N. Baker and Dr. Ron Rogus, dated March 7, 2007 [Request to release "Section B of the Building 2 Service Corridor"]

cc: Dr. D. Blair Spitzberg, Chief, NMSS Branch 3, Region IV  
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Mr. Jeff Wong, State of CA, Berkeley, CA  
Ms. Barbara Hamrick, State of CA, Brea, CA

**GENERAL ATOMICS'**  
**FINAL RADIOLOGICAL SURVEY REPORT**  
**FOR SECTION C OF THE BUILDING 2**  
**(SCIENCE LABORATORIES BUILDING)**  
**SERVICE CORRIDOR**

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## Table of Contents

INTRODUCTION .....	1
SITE DESCRIPTION .....	1
HISTORY OF USE .....	3
DECONTAMINATION EFFORTS AND CLASSIFICATION .....	3
CRITERIA FOR RELEASE TO UNRESTRICTED USE .....	4
As Low As Reasonably Achievable (ALARA) .....	4
Facilities and Equipment (and Asphalt or Concrete Surfaces) .....	5
Exposure Rate Guideline .....	5
INSTRUMENTATION & BACKGROUND MEASUREMENTS .....	5
Background Measurements for Instruments/Detectors .....	5
Minimum Detectable Activity (MDA) for Instruments/Detectors .....	5
Exposure Rate Background .....	6
FINAL SURVEYS PERFORMED .....	6
Objectives and Responsibilities .....	6
Survey Plans .....	7
Survey Summary .....	7
Comparisons of Site Decommissioning Plan Requirements with Final Surveys Performed in Section C of the Building 2 Service Corridor .....	7
RESULTS OF THE FINAL SURVEYS .....	8
Non-Impacted Area .....	8
Electrical Room .....	8
Elevator Machinery Room at Breezeway C .....	9
Ventilation Room above Breezeway C .....	10
Service Corridor Overhead Crawl Space .....	10
Service Corridor Overhead Crawl Space Vent Louvers External Surfaces .....	11
Non-Suspect Affected Area .....	11
Fixed Alpha Measurements .....	11
Fixed Beta Measurements .....	12
Removable Contamination (Wipe) Surveys .....	12
Alpha Scans .....	12
Beta Scans .....	12
Fixed Exposure Rate Measurements .....	12
Exposure Rate Scans .....	12
Suspect Affected Area .....	13
Ventilation Louver Exterior Surfaces .....	13
Fixed Alpha Measurements .....	13
Fixed Beta Measurements .....	13
Removable Contamination (Wipe) Surveys .....	13
Alpha Scans .....	13

Beta Scans .....	13
Exposure Rate Scans .....	13
Service Corridor .....	13
Fixed Alpha Measurements .....	13
Fixed Beta Measurements .....	14
Removable Contamination (Wipe) Surveys .....	14
Alpha Scans .....	14
Beta Scans .....	14
Fixed Exposure Rate Measurements .....	14
Exposure Rate Scans .....	14
CONFIRMATORY SURVEY .....	15
CONCLUSION .....	15

**List of Tables**

Table 1: USNRC’s Acceptable Surface Contamination Levels .....	T-1
Table 2: State of California’s Acceptable Surface Contamination Levels .....	T-2
Table 3: List of Instruments .....	T-3
Table 4: Building 2 Service Corridor B Wipe Survey Results .....	T-7
Table 5: Building 2 Service Corridor B Wipe Survey Results Suspect Affected & Unaffected Areas .....	T-9

**List of Figures (unpaged)**

Figure 1:	GA’s Main and Sorrento Valley Site
Figure 2A:	Building 2
Figure 2B:	Section C of Building 2
Figure 2C:	Section C of Building 2
Figure 3:	Building 2, End View
Figure 4:	Building 2 Service Corridor Section C Electrical Room Alpha and Beta Fixed Measurement Locations and Results and Wipe Survey Locations
Figure 5:	Building 2 Service Corridor Section C Electrical Room Alpha and Beta Scan Measurement Locations and Results
Figure 6:	Building 2 Service Corridor Section C Electrical Room Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
Figure 7:	Building 2 Service Corridor Section C Elevator Machinery Room Breezeway C Final Surveys
Figure 8:	Building 2 Service Corridor Section C Vent Room Above Breezeway C Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
Figure 9:	Building 2 Service Corridor Section C Vent Room Above Breezeway C Alpha and Beta Scan Measurement Locations and Results
Figure 10:	Building 2 Service Corridor Section C Vent Room Above Breezeway C Fixed Exposure

Rate and Exposure Rate Scan Measurement Locations and Results

- Figure 11: Building 2 Service Corridor Section C Overhead Crawl Space Column C51 to C57 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results
- Figure 12: Building 2 Service Corridor Section C Overhead Crawl Space Column C57 to C66 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results
- Figure 13: Building 2 Service Corridor Section C Overhead Crawl Space Column C66 to C72 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results
- Figure 14: Building 2 Service Corridor Section C Overhead Crawl Space Column C72 to C1 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results
- Figure 15: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface Alpha Fixed Measurement and Scan Locations and Results
- Figure 16: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface Beta Fixed Measurement and Scan Locations and Results
- Figure 17: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface Exposure Rate Scan and Large Area Wipe Locations and Results
- Figure 18: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface Wipe Survey Locations
- Figure 19: Building 2 Service Corridor Section C Level 1, Non-Suspect Affected Area, Columns C56 to C61 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 20: Building 2 Service Corridor Section C Level 1, Non-Suspect Affected Area, Columns C61 to C66 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 21: Building 2 Service Corridor Section C Level 1, Non-Suspect Affected Area, Columns C66 to C71 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 22: Building 2 Service Corridor Section C Level 1, Non-Suspect Affected Area, Columns C71 to C1 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 23: Building 2 Service Corridor, Section C Level 2, Non-Suspect Affected Area, Columns C51 to C56 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 24: Building 2 Service Corridor, Section C Level 2, Non-Suspect Affected Area, Columns C56 to C61 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 25: Building 2 Service Corridor, Section C Level 2, Non-Suspect Affected Area, Columns C61 to C66 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations

- Figure 26: Building 2 Service Corridor, Section C Level 2, Non-Suspect Affected Area, Columns C66 to C71 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 27: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C71 to C1 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 28: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C56 to C61 Alpha and Beta Surface Scan Measurement Locations and Results
- Figure 29: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C61 to C66 Alpha and Beta Scan Measurement Locations and Results
- Figure 30: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C66 to C71 Alpha and Beta Scan Measurement Locations and Results
- Figure 31: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C71 to C1 Alpha and Beta Surface Scan Measurement Locations and Results
- Figure 32: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C51 to C56 Alpha and Beta Scan Measurement Locations and Results
- Figure 33: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C56 to C61 Alpha and Beta Surface Scan Measurement Locations and Results
- Figure 34: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C61 to C66 Alpha and Beta Surface Scan Measurement Locations and Results
- Figure 35: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C66 to C71 Alpha and Beta Surface Scan Measurement Locations and Results
- Figure 36: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C71 to C1 Alpha and Beta Surface Scan Measurement Locations and Results
- Figure 37: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C56 to C61 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 38: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C61 to C66 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 39: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C66 to C71 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 40: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C71 to C1 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 41: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C51 to C56 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 42: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C56 to C61 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 43: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C61 to C66 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 44: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C66 to C71 Exposure Rate Fixed and Scan Measurement Locations and Results
- Figure 45: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C71 to C1 Exposure Rate Fixed and Scan Measurement Locations and Results

- Figure 46: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 51 to C54 Alpha and Beta Scan Survey Locations and Results
- Figure 47: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C51 to C54 Alpha Scan Survey Locations and Results
- Figure 48: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C51 to C54 Alpha Scan Survey Locations and Results
- Figure 49: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C54 to C57 Alpha and Beta Scan Survey Locations and Results
- Figure 50: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C54 to C57 Alpha Scan Survey Locations and Results
- Figure 51: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C54 to C57 Alpha Scan Survey Locations and Results
- Figure 52: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C57 to C60 Alpha and Beta Scan Survey Locations and Results
- Figure 53: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C57 to C60 Alpha Scan Survey Locations and Results
- Figure 54: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C57 to C60 Alpha Scan Survey Locations and Results
- Figure 55: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C64 to C67 Alpha and Beta Scan Survey Locations and Results
- Figure 56: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C64 to C67 Alpha Scan Survey Locations and Results
- Figure 57: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C64 to C67 Alpha Scan Survey Locations and Results
- Figure 58: Building 2 Service Corridor Section C First (Lowest) Floor Column C67 to C69 Alpha Scan Survey Locations and Results
- Figure 59: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C67 to C69 Alpha Scan Survey Locations and Results
- Figure 60: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C67 to C69 Alpha Scan Survey Locations and Results
- Figure 61: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C74 to C1 Alpha Scan Survey Locations and Results
- Figure 62: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C74 to C1 Alpha Scan Survey Locations and Results
- Figure 63: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C74 to C1 Alpha Scan Survey Locations and Results
- Figure 64: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C51 to C53 Alpha and Beta Scan Survey Locations and Results
- Figure 65: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C51 to C53 Alpha Scan Survey Locations and Results
- Figure 66: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C51 to C53 Alpha Scan Survey Locations and Results

- Figure 67: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C56 to C58 Alpha and Beta Scan Survey Locations and Results
- Figure 68: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C56 to C58 Alpha Scan Survey Locations and Results
- Figure 69: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C56 to C58 Alpha Scan Survey Locations and Results
- Figure 70: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C64 to C66 Alpha and Beta Scan Survey Locations and Results
- Figure 71: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C64 to C66 Alpha Scan Survey Locations and Results
- Figure 72: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C64 to C66 Alpha Scan Survey Locations and Results
- Figure 73: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C66 to C68 Alpha and Beta Scan Survey Locations and Results
- Figure 74: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C66 to C68 Alpha Scan Survey Locations and Results
- Figure 75: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C66 to C68 Alpha Scan Survey Locations and Results
- Figure 76: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C73 to C75 Alpha and Beta Scan Survey Locations and Results
- Figure 77: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C73 to C75 Alpha Scan Survey Locations and Results
- Figure 78: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C73 to C75 Alpha Scan Survey Locations and Results
- Figure 79: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C51 to C54 Beta Scan Survey Locations and Results
- Figure 80: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C51 to C54 Beta Scan Survey Locations and Results
- Figure 81: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C54 to C57 Beta Scan Survey Locations and Results
- Figure 82: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C54 to C57 Beta Scan Survey Locations and Results
- Figure 83: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C57 to C60 Beta Scan Survey Locations and Results
- Figure 84: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C57 to C60 Beta Scan Survey Locations and Results
- Figure 85: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C64 to C67 Beta Scan Survey Locations and Results
- Figure 86: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C64 to C67 Beta Scan Survey Locations and Results
- Figure 87: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C67 to C69 Beta Scan Survey Locations and Results

- Figure 88: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 67 to C69 Beta Scan Survey Locations and Results
- Figure 89: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C74 to C1 Beta Scan Survey Locations and Results
- Figure 90: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C74 to C1 Beta Scan Survey Locations and Results
- Figure 91: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C51 to C53 Beta Scan Survey Locations and Results
- Figure 92: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C51 to C53 Beta Scan Survey Locations and Results
- Figure 93: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C56 to C58 Beta Scan Survey Locations and Results
- Figure 94: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C56 to C58 Beta Scan Survey Locations and Results
- Figure 95: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C64 to C66 Beta Scan Survey Locations and Results
- Figure 96: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column 64 to C66 Beta Scan Survey Locations and Results
- Figure 97: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C66 to C68 Beta Scan Survey Locations and Results
- Figure 98: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C66 to C68 Beta Scan Survey Locations and Results
- Figure 99: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C73 to C75 Beta Scan Survey Locations and Results
- Figure 100: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C73 to C75 Beta Scan Survey Locations and Results
- Figure 101: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C51 to C54 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 102: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C51 to C54 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 103: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C51 to C54 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 104: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C54 to C57 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 105: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C54 to C57 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 106: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C54 to C57 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations

- Figure 107: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C57 to C60 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 108: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C57 to C60 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 109: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C57 to C60 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 110: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C64 to C67 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 111: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C64 to C67 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 112: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C64 to C67 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 113: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C67 to C69 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 114: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C67 to C69 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 115: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C67 to C69 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 116: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C74 to C1 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 117: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C74 to C1 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 118: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C74 to C1 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 119: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C51 to C53 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 120: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C51 to C53 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 121: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C51 to C53 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 122: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C56 to C58 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 123: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C56 to C58 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations

- Locations
- Figure 124: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C56 to C58 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 125: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C64 to C66 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 126: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C64 to C66 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 127: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C64 to C66 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 128: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C66 to C68 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 129: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C66 to C68 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 130: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C66 to C68 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 131: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C73 to C75 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 132: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C73 to C75 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 133: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C73 to C75 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations
- Figure 134: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C51 to C54 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 135: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C51 to C54 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 136: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C51 to C54 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 137: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C54 to C57 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 138: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C54 to C57 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 139: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C54 to C57 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 140: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C57 to C60 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



- Figure 162: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C66 to C68 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 163: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C66 to C68 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 164: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C73 to C75 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 165: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C73 to C75 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results
- Figure 166: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C73 to C75 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results

**Appendices**

- Appendix A: Final Survey Plans for Building 2 Service Corridor, Section C.
- Appendix B: Building 2 Service Corridor, Section C, Confirmatory Survey.

## Introduction

General Atomics (GA) is continuing its efforts directed at decontaminating, as appropriate, and obtaining the release to unrestricted use of selected facilities and land areas at General Atomics.

GA has recently completed the Final Radiological Survey of Section C of the Service Corridor of GA's Building 2 (Science Laboratories Building) located on GA's Main Site.

GA's Building 2 is a semi-circular "C"-shaped building consisting of laboratories and offices with five breezeways. It is a three-level structure comprised of a lower-level, an upper-level and mezzanines. Building 2 was constructed in three phases with each being a partial arc of a semi-circular structure. These three portions of the building are referred to as Sections A, B and C. A service corridor runs through each of these sections and separates upper and lower levels in each section. (See Figure 2A).

The Service Corridor of Section C comprises ~ 1/3 of the total service corridor of Building 2 and is located between and inclusive of lower-level labs and offices 300-359 and upper-level labs and offices 401-445. The total floor space area to be released to unrestricted use is approximately 9,496 ft<sup>2</sup> (~877 m<sup>2</sup>), which includes all three (3) levels, side rooms, and ventilation rooms above breezeway C.

GA is requesting both the Nuclear Regulatory Commission (NRC) and the State DHS/RHB (State) release Section C of the Building 2 (Science Laboratories Building) Service Corridor to unrestricted use.

This report documents the results of GA's radiological measurements completed within Section C of the Building 2 Service Corridor. The results of these surveys demonstrate that the service corridor of Section C, herein referred to as "Section C", meets the NRC- and State- approved criteria for release to unrestricted use.

## Site Description

Building 2, a.k.a. the Science Laboratories Building or "L" (for Laboratory) Building, is located on General Atomics' Main Site (see Figure 1). Building 2 contains approximately 142 laboratories, plus offices, hallways, and a service corridor which houses the utilities for the labs and offices (see Figure 2A). The laboratories were used during the past ~50 years primarily for research and development activities involving the use of radioactive material.

All 142 laboratories within Building 2 were released to unrestricted use by both the NRC and the State of California in various "groups" of labs. Subsequently, GA amended its State Radioactive Materials License to add 9 labs as authorized use locations. Of these, labs 517, 523, 530/532, 534, 560/562/564 were added to do work involving basic biological research carried out by GA's

biosciences group, i.e., Diazyme, and lab 407 was added for work involving tritium diffusion studies. None of these laboratories are authorized to use or store radioactive materials in the service corridor of Building 2. The roof of Building 2 has been released to unrestricted use by the NRC. GA is awaiting the release of the roof by the State DHS/RHB.

The service corridor is approximately eight (8) feet wide and occupies the entire span of the semi-circular shaped Building 2 (see Figure 2A). There are three levels within the Service Corridor: (1) The easily accessible ground floor or Lower Level, also called Level 1 or the 1<sup>st</sup> Level; having a concrete floor, (2) The accessible middle level, also called the Level 2 or 2<sup>nd</sup> Level, which has metal grating as the floor, and (3) The top level, also called the Overhead Crawl Space, which has periodic metal grate landings and is difficult to access. The majority of the overhead crawl space is occupied by piping, ventilation ducts, and electrical cables. These levels are shown in Figure 3.

The service corridor contains all of the utilities, heating, and air conditioning needed by the laboratories. In addition, sewer drain lines which collect waste water from the laboratories and rest rooms are located beneath the first floor of the service corridor.

In 2000, the center three (3) feet of the concrete floor was removed and the sewer drain lines excavated throughout the entire length of the service corridor. A final radiological survey of the trench was performed in 2001. In April 2001, the report summarizing the results of this final radiological survey was submitted to the NRC and State of California, along with a request to release this trench to unrestricted use. The NRC released the trench to unrestricted use per SNM-696 license amendment #72 and the State released the trench to unrestricted use per 0145-37 license amendment #158. New sewer drain lines were installed, the trench was backfilled and a new concrete floor was poured in the center ~three feet of the first (lower) floor of the entire service corridor.

Due to the large size and complexity of the service corridor, it was sectioned off into three (3) survey sections: (1) Section A, (2) Section B and (3) Section C. This report only addresses Section C, which is shown in greater detail in Figures 2B and 2C. Section C of the service corridor occupies ~ $\frac{1}{3}$  of the total service corridor and is located between lower-level labs and offices 300-359 and between upper-level labs and offices 401-445. The column numbers (sometimes called I-beam numbers) in relation to the laboratories in Section C are also shown in Figures 2B and 2C.

In addition, there are two "side" rooms, connected to and accessible from the service corridor. These "side" rooms are (1) an electrical room that contains electrical transformers and switch gear, and (2) an elevator machinery room. There is also a large ventilation room above Breezeway C.

Section C is approximately 375 feet long. The lower level is approximately 9'7" high, the second level is approximately 8'10" high, and the crawl space is approximately 7'10" high. The first (lower) level has a concrete floor (the center 3' of which is new concrete), the second level floor is mostly steel grating, and the crawl space has sporadic metal grating landings over ~ $\frac{1}{4}$  of the total floor surface area. The remaining area is filled with piping, ducts, and electrical conduit/wires. The

service corridor can be accessed through doorways in some of the laboratories, at the breezeways which separate groups of laboratories, and from both ends of the semi-circular Building 2.

The total floor space of Section C is approximately 9,496 ft<sup>2</sup> (~877 m<sup>2</sup>); which is comprised of the following areas/locations:

<u>Location/Area</u>	<u>Area (ft<sup>2</sup>)</u>
First Level (lower level) floor area	3,000
Second Level (upper level)	3,000
Crawl Space (grated floor area)	750
Electrical Room	750
Elevator Machinery Room	24
Ventilation room above Breezeway C	<u>1,972</u>
	9,496

### History of Use

The Service Corridor is used to provide utilities and other services to the Building 2 laboratories. On occasion, contaminated equipment and 55 gallon drums containing low levels of liquid radioactive waste were temporarily stored in the service corridor. These activities resulted in low levels of radioactive contamination in certain localized areas.

### Decontamination Efforts and Classification

In 1994, a few ventilation ducts in the service corridor were identified as being contaminated with trace levels of radioactivity. In February 1994, all of the contaminated ducts, fans and motors that were found to be contaminated were removed and disposed of as low level radioactive waste at an authorized low-level radioactive waste disposal site. In May 1994, a survey of all of the ventilation systems remaining was completed and all additional contaminated equipment found was either removed and disposed of as low-level radioactive waste or decontaminated. Additional surveying was performed during this Final Survey.

Characterization surveys of the entire Service Corridor (i.e., Sections A, B and C) began in 1998. Samples of concrete surfaces found to be contaminated were collected and analyzed by gamma spectroscopy. The following areas within Section C were identified as having elevated radioactivity.

- (1) The first (lower) level between column numbers C51-C60, C64-C69, and C74-C1 (excluding the center 3 feet of the floor because it is new), and
- (2) The second (upper) level between column C51-C53, C56-C58, C64-C68, and C73-C75 (Grating and Walls).

On the basis of gamma spectroscopy analyses of concrete samples, U-235, U-238 and Cs-137



contamination was identified. U-235/U-238 contamination was identified in all of the areas; the maximum concentration found was 4.17 pCi/g U-235 on the floor and wall near column (or I-beam) C51. Cs-137 was detected near columns C57 and C58 at concentrations as high as 430 pCi/g. The floor required decontamination as far as 6" in depth to remove the contamination. Most areas were decontaminated to levels near or close to normal background levels (circa 1998).

In 2001, all of the contaminated drain lines were excavated and disposed of as low level radioactive waste at an authorized low-level radioactive waste disposal site. GA submitted a Final Radiological Survey Report to the NRC and State DHS/RHB for the resultant trench in April 2001 summarizing radiation levels and the results of gamma scan analyses of soil samples taken in the trench. The NRC subsequently performed a confirmatory survey and released the trench to unrestricted use (license amendment #72 to GA's SNM-696 license). In July 2004, the State DHS/RHB also released the trench to unrestricted use (license amendment #158). The trench, in the middle of the service corridor, was subsequently filled in with clean soil and covered with new concrete.

The original concrete that was broken/cut during the excavation of the contaminated drain lines was surveyed and the results confirmed radiation levels were well below release criteria. This concrete was placed in the former Soil Staging Area (SSA Bin T-31), and subsequently surveyed and released to unrestricted use by the NRC.

In January 2002, a Final Survey Plan for the Service Corridor was issued. The Plan was revised and supplements to the plan were later issued in 2003 and 2004. The plan and supplements are provided in Appendix A. Section C was classified as a Non-Suspect Affected Area.

During the performance of the final radiological survey of Section C in 2004, elevated activity levels were detected on the exterior surfaces of the wall louvers at columns C56 to C58 and C60 to C61. This area was reclassified as a "**Suspect Affected Area**". The contaminated louvers were removed and disposed of low level radioactive waste. The supporting frames were decontaminated using hand tools and janitorial equipment and new louvers were installed.

The remaining portions of Section C of the Building 2 Service Corridor were classified as a "**Non-Suspect Affected Area**".

The "Side Rooms" (electrical room and elevator machinery room) and the large ventilation room above Breezeway C were classified as "**Unaffected Areas**".

### Criteria for Release to Unrestricted Use

#### As Low As Reasonably Achievable (ALARA)

During its decommissioning efforts, GA always attempts to decontaminate to levels as close to natural background levels, and as far below the NRC- and State- approved release criteria, as is reasonably achievable.

Facilities and Equipment (and Asphalt or Concrete Surfaces)

The predominate contaminates, based on process knowledge and isotopic analyses of concrete samples, were identified as U-235 and Cs-137. The U.S. NRC's and the State DHS/RHB's criteria for release of facilities and equipment contaminated with these radionuclides are provided in Tables 1 and 2, respectively. The applicable guidelines for enriched uranium and beta/gamma emitters (including Cs-137) are summarized as follows:

- 5,000 dpm/100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area
- 15,000 dpm/100 cm<sup>2</sup>, maximum in a 100 cm<sup>2</sup> area if the average over 1 m<sup>2</sup> is met
- 1,000 dpm/100 cm<sup>2</sup>, removable activity

Exposure Rate Guideline

Pursuant to the NRC and State of California approved release criteria, exposure rates measured at 1 m above the surface are not to exceed 10 µR/hr above natural background levels.

**Instrumentation and Background Measurements**

A list of instruments used during the radiological surveys is shown in Table 3. The table includes: (1) a description of the instrument, model number and its serial number, (2) a description of the detector (if applicable) and its serial number, (3) instrument ranges, (4) calibration due dates, (5) typical background readings and (6) calibration efficiencies (if applicable). All of the instruments used were calibrated semiannually and after repair, except for exposure rate meters which were calibrated quarterly.

Background Measurements for Instruments/Detectors

Building 13 on GA's main site was used for conducting background measurements with instruments used for the final survey because: (1) There is no history involving the use or storage of radioactive materials in Building 13, and (2) The various surfaces and construction materials found inside the Building 2 service corridor could also be found within and outside of Building 13. Background information, where appropriate, is included in Table 3.

Minimum Detectable Activity (MDA)

Minimum detectable activities (MDA's) for instruments used for fixed measurements, for each type of surface (see Table 3), were calculated using equation (5-2) from the NUREG/CR-5849 as shown below:

Equation (5-2)

$$MDA = \frac{2.71 + 4.65\sqrt{B_R \times t}}{t \times E \times \frac{A}{100}} \text{ (dpm/100cm}^2\text{)}$$

Where:

- $B_R$  = background rate (cpm)
- $t$  = count time (min)
- $E$  = efficiency (counts/disintegration)
- $A$  = area of the detector ( $cm^2$ )

The MDA for scans using the 434  $cm^2$  gas flow proportional detector (floor monitor) was calculated using equation 5-3 from the draft NUREG/CR-5849 (modified in accordance with the discussion on page 5.8 of the draft NUREG/CR-5849), as follows:

Equation (5-3):

$$MDA = \frac{X \times B_R}{E \times \frac{A}{100}} \text{ (dpm/100cm}^2\text{)}$$

Where:

- $X$  = the multiple/portion of the background rate that can be discernable as an increase in instrument response by the surveyor (dependent on the type of instrument used).
- $B_R$  = background rate in (cpm)
- $E$  = efficiency (counts/disintegration)
- $A$  = area of the detector ( $cm^2$ )

#### Exposure Rate Background

The typical exposure rate background for GA's site using a Ludlum Model 19 micro R meter is 12-18  $\mu R/hr$  measured at 1 m from the surface of soil. This range of exposure rates can be measured south of Building 15 (an office building on the eastern portion of the GA site). Furthermore, measurements taken offsite in ten (10) different locations (nine (9) offsite and one (1) onsite at a non-impacted area near Building 15) over a period of 15 months also averaged  $\sim 15 \mu R/hr$  (measured at 1 m from the surface). The range of 12-18  $\mu R/hr$  is typical at the GA site for the external dose rates measured at 1 meter from the surface. Background exposure rates in non-impacted areas, measured with the specific instruments used for this final survey, are identified in Table 3.

### Final Surveys Performed

#### Objectives and Responsibilities

The objectives of the final survey plans were: (1) To demonstrate that the average surface residual contamination levels for each survey unit were below the approved release criteria, (2) To show that the maximum residual activity did not exceed three times the approved release criteria for average surface contamination value in an area up to 100  $cm^2$ , and, (3) That the exposure rate measurements taken in these areas, measured at 1 meter above the surface, were  $<10 \mu R/hr$  above background.

**GENERAL ATOMICS** Final Radiological Survey Report for Section C of the Building 2 (Science Laboratories Building) Service Corridor

Survey Plans

A Final Survey Plan was developed based on the previous history of use, results of periodic surveys performed in the Building 2 Service Corridor, the radionuclides of concern, the potential for contamination, the various types of surfaces encountered and the classification of the various areas.

Additional supplements to this plan were issued to perform additional isotopic analysis on concrete samples, to perform surveys of the "side" rooms and crawl space and following the re-classification of an area. (Note: Some of the plans refer to other sections of the service corridor other than Section C). The survey plan and it's supplements are provided in Appendix A.

The final surveys were conducted in accordance with approved survey plans by qualified Health Physics Technicians having a minimum of three years health physics experience. Each survey taken was documented on a daily basis to a worksheet/drawing showing the approximate locations surveyed/sampled. Documentation includes the results of the measurements (including units), technician's signature, date, instrument(s) used (including model and serial number of both ratemeter and detector), calibration due date, % efficiency, and background readings (if applicable) and other pertinent information.

Survey Summary

Comparisons of the Site Decommissioning Plan requirements with the actual Final Surveys performed in relation to the percentage of surface area scanned, number of measurements (i.e., number of fixed radiation measurements), and exposure rate measurements ( $\mu\text{R/hr}$ ) are provided below:

Comparisons of Site Decommissioning Plan Requirements with Final Surveys Performed in Section C of the Building 2 Service Corridor					
Survey Area <sup>(1)</sup>	Gridding Required ?	# of Direct Measurements Fixed $\alpha$ , $\beta$ , or Wipes	Surface Scans $\alpha$ , $\beta$ ,	# of Exposure Rate Fixed Measurements ( $\mu\text{R/hr}$ )	Exposure Rate Scan Measurements ( $\mu\text{R/hr}$ )
D-Plan <sup>(2)</sup> Unaffected Area (required) →	Not Required	Minimum of 5 (Based on 255 m <sup>2</sup> ) 1 per 50 m <sup>2</sup> or 1 every ~7 m.	10% accessible floors & walls below 2m	Minimum of 26 (Based on 255 m <sup>2</sup> ) 1 per 10 m <sup>2</sup> or 1 every ~3 m.	10% accessible floors and walls below 2m
Final Surveys Unaffected Area (performed) →	No	Total = 291 98 $\alpha$ , 97 $\beta$ , & 96 wipes; plus large area wipes taken in crawl space.	10% floors 10% walls below 2m, except elevator mechanical room.	94 measurements	10% of floors and walls below 2m, 100% of Vent Louver external surfaces.

Comparisons of Site Decommissioning Plan Requirements with Final Surveys Performed in Section C of the Building 2 Service Corridor					
Survey Area <sup>(1)</sup>	Gridding Required ?	# of Direct Measurements Fixed $\alpha$ , $\beta$ , or Wipes	Surface Scans $\alpha$ , $\beta$ .	# of Exposure Rate Fixed Measurements ( $\mu$ R/hr)	Exposure Rate Scan Measurements ( $\mu$ R/hr)
D-Plan <sup>(2)</sup> Non-Suspect Affected Area (required) →	Not Required	Minimum of 69 (Based on ~1,385 m <sup>2</sup> ) 1 per 20 m <sup>2</sup> or 1 every 4.5 m.	10% accessible floors & walls below 2m.	Minimum of 18 1 per 10 m <sup>2</sup> or 1 every ~3 m	10% accessible floors and walls below 2m.
Final Surveys Non-Suspect Affected Area (performed) →	No	Total = 328 76 fixed $\alpha$ , 173 fixed $\beta$ , & 79 wipes	100% floor & walls < 2m; 10% of walls above 2m (except new 3' of floor)	35 measurements 1 m from surface	1 <sup>st</sup> level - 100% of accessible floor & walls < 2m & 10% of walls > 2m; (except new middle 3' of floor); 100% of the grating on the 2 <sup>nd</sup> level
D-Plan <sup>(2)</sup> Suspect Affected Area (required) →	Yes, if feasible	Minimum of 379 (Based on 1,518 m <sup>2</sup> ) 1 per 4 m <sup>2</sup> or 1 every 2m.	100% accessible floors & walls below 2m	Minimum of 47 1 per 4 m <sup>2</sup> or 1 every 2m.	100% accessible floors and walls below 2m.
Final Surveys Suspect Affected Area (performed) →	Yes, Where possible	Total = 463 150 $\alpha$ , 166 $\beta$ , & 147 wipes	100% of accessible floor & walls < 2m; 10% of walls > 2m (except new 3' of floor)	390 measurements	100% of accessible floor & walls < 2m; 10% of walls > 2m (except new 3' of floor)

- (1) The total surface (Survey Required) area to be released:  
 Unaffected Area= approximately 2,746 ft<sup>2</sup> (~ 255 m<sup>2</sup>), Floor Space Only.  
 Non-Suspect Affected Area= approximately 14,896 ft<sup>2</sup> (~ 1,385 m<sup>2</sup>), Old Floor Space and walls up to 2m.  
 Suspect Affected Area= approximately 16,325 ft<sup>2</sup> (~ 1,518 m<sup>2</sup>), Old Floor Space and walls up to 2m.
- (2) D-Plan = GA's NRC- and State- Approved Site Decommissioning Plan.

### Results of the Final Surveys

The final radiological survey results for Section C, are provided in figures and tables as noted below:

#### Non-Impacted Areas

##### Electrical Room

See Figures 4, 5, and 6 for measurements locations and results, and, Table 5 for wipe analysis results. A summary of the survey results is as follows:

Alpha Fixed Activity: Four (4) measurements taken, all results were not distinguishable from normal background levels.

Beta Fixed Activity: Four (4) measurements taken, the highest result was 994 cp2m, which is equivalent to 276 dpm/100 cm<sup>2</sup>; far less than the NRC- and State- approved limits for release to unrestricted use.

Alpha Scans: 10% of floor surfaces and walls below 2m were scanned with a 434 cm<sup>2</sup> gas flow proportional detector. The results ranged from 10 to 50 cpm; not distinguishable from normal background levels.

Beta Scans: 10% of floor surfaces and walls below 2m were scanned with a 434 cm<sup>2</sup> gas flow proportional detector. The results ranged from 1,400 to 1,800 cpm, which are not distinguishable from normal background levels.

Loose Surface Activity: Four (4) wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. All results are not discernible from natural background activity levels.

Exposure Rate Measurements: Four (4) exposure rate measurements were taken at 1 meter from the floor surfaces. The highest measurement was 17  $\mu$ R/hr, which is less than the approved release criteria of 10  $\mu$ R/hr above background (14 to 22  $\mu$ R/hr).

Exposure Rate Surface Scans: 10% of floor surfaces and walls below 2m were scanned with a 2" x 2" NaI (TI) detector held within 1" of the surface. The range was 15 to 22  $\mu$ R/hr, which is also below the approved release criteria.

#### Elevator Machinery Room at Breezeway C

See Figure 7 for measurement locations and results and, Table 5 for wipe analysis results. A summary of the survey results is as follows:

Alpha Fixed Activity: One measurement was taken, the result was not distinguishable from normal background levels.

Beta Fixed Activity: One measurement taken, the highest result was 970 cp2m, which is equivalent to 237 dpm/100 cm<sup>2</sup>; far less than the NRC- and State- approved release criteria.

Alpha Scans: 10% of floor surfaces and walls below 2m were scanned with a 434 cm<sup>2</sup> gas flow proportional detector. The results ranged from 0 to 30 cpm, which is at natural background levels.

Beta Scans: 10% of floor surfaces and walls below 2m were scanned with a 434 cm<sup>2</sup> gas flow proportional detector. The results ranged from 1,400 to 1,500 cpm, which is at natural background levels.

Loose Surface Activity: One wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. The results were not distinguishable from normal background levels.

Fixed Exposure Rate Measurements: One exposure rate measurements were taken at 1 meter from the floor surfaces. The highest measurement was 14  $\mu\text{R/hr}$ , which is at natural background levels.

Exposure Rate Surface Scans: 10% of floor surfaces and walls below 2m were scanned with a 2" x 2" NaI(Tl) detector held within 1" of the surface. The range was 14 to 17  $\mu\text{R/hr}$ , which is at natural background levels.

#### Ventilation Room above Breezeway "C"

See Figures 8, 9, and 10 for measurement locations and results, and, Table 5 for wipe analysis results. A summary of the survey results is as follows:

Alpha Fixed Activity: Five (5) measurements taken, all results were not distinguishable from normal background levels.

Beta Fixed Activity: Five (5) measurements taken, the highest result was 860 cp2m, which is equivalent to 61 dpm/100 cm<sup>2</sup>; less than the minimum detectable activity (MDA) level for the instrument used.

Alpha Scans: 10% of floor surfaces and walls below 2m were scanned with a 434 cm<sup>2</sup> gas flow proportional detector. The results ranged from 0 to 60 cpm, which are not distinguishable from normal background levels.

Beta Scans: 10% of floor surfaces and walls below 2m were scanned with a 434 cm<sup>2</sup> gas flow proportional detector. The results ranged from 700 to 1,400 cpm, which are not distinguishable from normal background levels.

Loose Surface Activity: Five (5) wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. All results were not discernible from natural background activity levels.

Exposure Rate Measurements: Six (6) exposure rate measurements were taken at 1 meter from the floor surfaces. The highest measurement was 10  $\mu\text{R/hr}$ , which is less at natural background levels.

Exposure Rate Surface Scans: 10% of floor surfaces and walls below 2m were scanned with a 2" x 2" NaI (Tl) detector held within 1" of the surface. The range was 6 to 12  $\mu\text{R/hr}$ .

#### Service Corridor Overhead Crawl Space

See Figures 11, 12, 13, and 14 for measurement locations and results. A summary of the survey results is as follows:

Loose Surface Activity: Sixty-three (63) large area wipes were taken and analyzed in the field for  $\alpha$  and  $\beta$  activity, all results were at natural background levels.

Exposure Rate Measurements: Eighty-four (84) exposure rate measurement were taken at 1 meter from the floor surfaces. The highest measurement was 12  $\mu\text{R/hr}$ , which is at natural background levels.

Exposure Rate Surface Scans: 10% of all accessible surfaces were scanned with a 2" x 2" NaI (TI) detector held within 1" of the surface. The range was 5 to 13  $\mu\text{R/hr}$ , which is at natural background levels.

#### Service Corridor Overhead Crawl Space Vent Louvers External Surfaces

See Figures 15, 16, 17, and 18 for measurement locations and result, and, Table 5 for wipe analysis results. A summary of the survey results is as follows:

Alpha fixed activity: Eighty-eight (88) fixed Alpha measurements were taken, all results were not distinguishable from normal background levels.

Beta Fixed Activity: Eighty-seven (87) measurements taken; results were not distinguishable from normal background levels.

Loose Surface Activity: Eighty-six (86) wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. All results were not discernible from natural background activity levels. In addition, twenty-six (26) Large Area Wipe samples were taken and analyzed in the field with hand held instruments for alpha and beta activity. All wipe results which are not distinguishable from normal background levels.

Exposure Rate Surface Scans: 100% of all accessible surfaces were scanned with a 2" x 2" NaI (TI) detector held within 1" of the surface. The range was 5 to 12  $\mu\text{R/hr}$ , which is at natural background levels.

*Note: The louvers at column C60 to C61 and C55 to C58 were re-classified as a Suspect Affected Area. See the results for the surveys taken between these columns in the Suspect Affected Area section below.*

#### Non-Suspect Affected Area

##### Fixed Alpha Measurements:

A total of seventy-six (76)  $\alpha$  measurements were taken with the detector probe held within 1/2" for 30 seconds to 1 minute. All measurements were at the natural background level for the surfaces measured (0-20 cpm). See Figures 19, 20, 21, and 22 for the 1<sup>st</sup> (lowest) level survey locations and results, and, Figures 23, 24, 25, 26 and 27 for the 2<sup>nd</sup> level survey locations and results.

Fixed Beta Measurements:

A total of 173  $\beta$  measurements were taken with the detector probe held within 1/2" for 2 minutes. The highest measurement was 263 dpm/100 cm<sup>2</sup> on the Floor at column C63 to C64 and C73 to C74 on the 1<sup>st</sup> level (see figures 20 and 22). This result is far less than the NRC- and State- approved release criteria. See Figures 19, 20, 21, and 22 for the 1<sup>st</sup> (lowest) level survey locations and results, and, Figures 23, 24, 25, 26 and 27 for the 2<sup>nd</sup> level survey locations and results.

Removable Contamination (Wipe) Surveys:

A total of 115 wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. All results were not discernible from natural background activity levels. See Figures 19, 20, 21, and 22 for the 1<sup>st</sup> (lowest) level survey locations and results, and, Figures 23, 24, 25, 26 and 27 for the 2<sup>nd</sup> level survey locations, and, Table 4 for results.

Alpha Scans:

100% of the accessible floor and wall surfaces below 2m, with the exception of the middle three (3) feet of new floor material, and, 10% of the accessible walls above 2m, was scanned for  $\alpha$  activity. All results were not distinguishable from normal background levels. See Figures 28, 29, 30, and 31 for the 1<sup>st</sup> level survey locations and results, and, Figures 32, 33, 34, 35, and 36 for the 2<sup>nd</sup> level survey locations and results.

Beta Scans:

100% of the accessible floor and wall surfaces below 2m, with the exception of the middle three (3) feet of new floor material, and, 10% of the accessible walls above 2m, was scanned for  $\beta$  activity. The highest activity level found was 2,800 cpm on the 2<sup>nd</sup> level between columns C71 and C74 (see Figure 31). This activity level is equivalent to 615 dpm/100 cm<sup>2</sup>, which is far below the NRC- and State- approved release criteria identified in the GA Site Decommissioning Plan. See Figures 28, 29, 30, and 31 for the 1<sup>st</sup> level survey locations and results, and, Figures 32, 33, 34, 35, and 36 for the 2<sup>nd</sup> level survey locations and results.

Fixed Exposure Rate Measurements:

Thirty-five (35) exposure Rate measurements were taken in the center of the service corridor, on the 1<sup>st</sup> and 2<sup>nd</sup> level, at 1 m from the floor surface and approximately 1 m from both the inside and outside walls (simultaneously). All results were not discernible from natural background levels. See Figures 37, 38, 39, 53, and 40 for the 1<sup>st</sup> level survey locations and results, and, Figures 41, 42, 43, 44, and 45 for the 2<sup>nd</sup> level survey locations and results.

Exposure Rate Scans:

100% of the accessible floor and wall surfaces below 2m, with the exception of the middle three (3) feet of new floor material, and, 10% of the accessible walls above 2m on the first level was scanned with a 2" x 2" NaI (TI) detector held within 1" of the surface. On the second level, 100% of the grated floor was scanned. All results were not discernible from natural background activity levels. See Figures 37, 38, 39, 53, and 40 for the 1<sup>st</sup> level survey locations and results, and, Figures 41, 42, 43, 44, and 45 for the 2<sup>nd</sup> level survey locations and results.

### **Suspect Affected Area**

#### **Ventilation Louver Exterior Surfaces:**

The following survey results were obtained from the surveys performed on the re-classified exterior surfaces of the ventilation louvers located on the outside walls of the Crawl Space, after D&D operations. See figures 15, 16, 17, and 18 for details.

#### **Fixed Alpha Measurements:**

A total of seventeen (17)  $\alpha$  measurements were taken with the detector probe held within  $\frac{1}{2}$ " for 30 seconds to 1 minute. All measurements were at the natural background level for the surfaces measured (20-40 cpm). See Figure 15 for survey locations and results.

#### **Fixed Beta Measurements:**

A total of sixteen (16)  $\beta$  measurements were taken with the detector probe held within  $\frac{1}{2}$ " for 2 minutes. All measurements were at natural background levels. See Figure 16 for survey locations and results.

#### **Removable Contamination (Wipe) Surveys:**

A total of sixteen (16), 100 cm<sup>2</sup> wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. All results were not discernible from natural background activity levels. See figure 18 for locations and Table 5 for results.

#### **Alpha Scans:**

100% of the surface was scanned with the detector held within  $\frac{1}{2}$ " of the surface. All results were at natural background levels. See figure 15 for locations and results.

#### **Beta Scans:**

100% of the surfaces were scanned for  $\beta$  activity. The results were at natural background levels. See figure 16 for locations and results.

#### **Exposure Rate Scans:**

100% of the surfaces were scanned with a 2" x 2" NaI (Tl) held within 1" of the surface. All results were not discernible from natural background activity levels. See Figure 17 for survey locations and results.

### **Service Corridor:**

Following D&D operations in the corridor areas re-classified as Suspect Affected Areas, a final survey was taken. A summary of the surveys taken, and their results, are as follows:

#### **Fixed Alpha Measurements:**

A total of 133  $\alpha$  measurements were taken with the detector probe held within  $\frac{1}{2}$ " for 30 seconds to 1 minute. The highest measurement was 80 cpm, which is equivalent to 533 dpm/100cm<sup>2</sup>, on the outside wall, middle (2<sup>nd</sup>) level, between columns C74 and C75(See Figure 78 for location). This

activity level is far below the NRC- and State- approved release criteria. See Figures 48, 78, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, and 133 for all survey locations and results.

#### Fixed Beta Measurements:

A total of 150  $\beta$  measurements were taken with the detector probe held within  $\frac{1}{2}$ " for 2 minutes. The highest measurement was 2221 cp2m, which corresponds to 1852 dpm/100 cm<sup>2</sup>, on the first level floor between columns C64 and C67 (see Figure 110). This result is far less than the NRC- and State- approved release criteria. See Figures 88, 91, 92, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, and 133 for all survey locations and results.

#### Removable Contamination (Wipe) Surveys:

A total of 131 wipe samples were taken and analyzed for  $\alpha$  and  $\beta$  activity. All results were not discernible from natural background activity levels. See Figures 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, and 133 for survey locations, and, Table 4 for results.

#### Alpha Scans:

100% of the accessible floor and wall surfaces below 2m, with the exception of the middle three (3) feet of new floor material, and, 10% of the accessible walls above 2m, was scanned for  $\alpha$  activity. The highest activity level discovered was 160 cpm, which is equivalent to 130 dpm/100 cm<sup>2</sup>, located on a flight of stairs between columns C51 and C52 (see figure 48 for details). This activity level is far below the NRC- and State- approved release criteria identified in the GA Site Decommissioning Plan. See Figures 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, and 78 for all survey locations and results.

#### Beta Scans:

100% of the accessible floor and wall surfaces below 2m, with the exception of the middle three (3) feet of new floor material, and, 10% of the accessible walls above 2m, was scanned for  $\beta$  activity. The highest activity level found was 2,800 cpm, which is equivalent to 607 dpm/100 cm<sup>2</sup> (see Figure 55), which is far below the NRC- and State- approved release criteria identified in the GA Site Decommissioning Plan. See Figures 46, 49, 52, 55, 58, 61, 64, 67, 70, 73, 76, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, and 100 for all survey locations and results.

#### Fixed Exposure Rate Measurements:

390 fixed exposure Rate measurements were taken with a 2" x 2" NaI (TI) detector held at 1 m from the surface. All results were not discernible from natural background levels. See Figures 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, and 163 for survey locations and results.

#### Exposure Rate Scans:

100% of the accessible floor and wall surfaces below 2m, with the exception of the middle three (3)

feet of new floor material, and, 10% of the accessible walls above 2m on the first level was scanned with a 2" x 2" NaI (Tl) detector held within 1" of the surface. On the second level, 100% of the grated floor was scanned. All results were not discernible from natural background activity levels. See Figures 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, and 163 for survey locations and results.

### **Confirmatory Survey**

A Confirmatory Survey was performed by GA Health Physics technicians who were not routinely assigned to the performance of the Final Survey. This survey was conducted during October and November, 2004 in accordance with a survey plan. The results of this survey supports the results of the Final survey; all residual activity is far below the NRC- and State approved release criteria as defined in the GA Site Decommissioning Plan. See Appendix B for the confirmatory survey plan, a survey summary, and the survey maps showing the locations and results of all surveys performed.

### **Conclusion**

Final residual contamination and radiation surveys, as documented in this report, demonstrate that Section C of GA's Building 2 Service Corridor, meets the NRC- and State- approved criteria for release to unrestricted use.

**Table 1: USNRC'S ACCEPTABLE SURFACE CONTAMINATION LEVELS <sup>1</sup>**

Nuclides	Average <sup>b,c,f</sup> (dpm/100cm <sup>2</sup> )	Maximum <sup>b,d,f</sup> (dpm/100 cm <sup>2</sup> )	Removable <sup>b,e,f</sup> (dpm/100cm <sup>2</sup> )
U-nat, <sup>235</sup> U, <sup>238</sup> U, & associated decay products	5,000 α	15,000 α	1,000 α
Transuranics, <sup>226</sup> Ra, <sup>228</sup> Ra, <sup>230</sup> Th, <sup>228</sup> Th, <sup>231</sup> Pa, <sup>227</sup> Ac, <sup>125</sup> I, <sup>129</sup> I	100	300	20
Th-nat, <sup>232</sup> Th, <sup>90</sup> Sr, <sup>223</sup> Ra, <sup>224</sup> Ra, <sup>232</sup> U, <sup>126</sup> I, <sup>133</sup> I, <sup>131</sup> I	1,000	3,000	200
Beta/gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except <sup>90</sup> Sr and other noted above.	5,000	15,000	1,000

- a Where surface contamination by both alpha- and beta/gamma-emitting nuclides exists, the limits established for alpha- and beta/gamma-emitting nuclides should apply independently.
- b As used in this table dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, an geometric factors associated with the instrumentation.
- c Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.
- d The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.
- e The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, then pertinent levels should be reduced proportionally and the entire surface should be wiped.
- f The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mRad/hr at 1 cm<sup>2</sup> and 1.0 mRad/hr at 1 cm<sup>2</sup>, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

<b>Table 2: STATE OF CA ACCEPTABLE SURFACE CONTAMINATION LEVELS <sup>1</sup></b>			
<b>Nuclides<sup>a</sup></b>	<b>Average<sup>b,c,f</sup> (dpm/100cm<sup>2</sup>)</b>	<b>Maximum<sup>b,d,f</sup> (dpm/100cm<sup>2</sup>)</b>	<b>Removable<sup>b,e,f</sup> (dpm/100cm<sup>2</sup>)</b>
U-nat, <sup>235</sup> U, <sup>238</sup> U, & associated decay products	5,000	15,000	1,000
Transuranics, <sup>226</sup> Ra, <sup>228</sup> Ra, <sup>230</sup> Th, <sup>228</sup> Th, <sup>231</sup> Pa, <sup>227</sup> Ac, <sup>125</sup> I, <sup>129</sup> I	100	300	20
Th-nat, <sup>232</sup> Th, <sup>90</sup> Sr, <sup>223</sup> Ra, <sup>224</sup> Ra, <sup>232</sup> U, <sup>126</sup> I, <sup>133</sup> I, <sup>131</sup> I	1,000	3,000	200
Beta/gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except <sup>90</sup> Sr and other noted above	5,000	15,000	1,000
<p>a Where surface contamination by both alpha- and beta/gamma-emitting nuclides exists, the limits established for alpha- and beta/gamma-emitting nuclides should apply independently.</p> <p>b As used in this table dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.</p> <p>c Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.</p> <p>d The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.</p> <p>e The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, then pertinent levels should be reduced proportionally and the entire surface should be wiped.</p> <p>f The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm<sup>2</sup> and 1.0 mrad/hr at 1 cm<sup>2</sup>, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.</p>			

<sup>1</sup> Guidelines For Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses For byproduct, Source, or Special Nuclear Material, also known as "Decon-1" incorporated into GA's State of CA Radioactive Materials License.

**Table 3: Building 2 Service Corridor Section C Final Survey List of Instruments**

Instrument	Detector	Range (cpm)	Calibration Due Date	Efficiency	Background	Description
<b>Non-Suspect Affected Area Survey</b>						
Ludlum Model 2221 S/N 84459	Ludlum Model 43-37 434 cm <sup>2</sup> gas flow proportional <b>Beta detector</b> S/N 086215	Four Linear Ranges 0-500,000 & one Log 50-500,000	07-24-02 09-27-02 11-12-02	31.08%	1840-2100 cpm on concrete, 1640 - 1850 cpm on cement block 1730-1800cpm, metal grating Scan MDA = 438 dpm/100 cm <sup>2</sup> (concrete), 388 dpm/100 cm <sup>2</sup> (cement block), 393 dpm/100 cm <sup>2</sup> , grating	Active Probe Area = 434 cm <sup>2</sup> . The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick disconnects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
Ludlum Model 2221 S/N 148425	Ludlum Model 43-37 434 cm <sup>2</sup> gas flow proportional <b>Alpha detector</b> S/N 086236	Four Linear Ranges 0-500,000 & one Log 50-500,000	06-02-02 07-31-02	21-29% 21.09%	10-40 cpm on concrete Scan MDA= 108 dpm/100 cm <sup>2</sup>	Active Probe Area = 434 cm <sup>2</sup> . The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick disconnects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
Ludlum Model 3 S/N 151348	Ludlum Model 44-10 NaI (TI) Scintillator <b>Gamma detector</b> S/N 163169	Five Ranges 0-500 µR/hr	03-24-02, 07-24-02	N/A	22-28 µR/hr @ contact 20-25 µR/hr @ 1m ( in concrete room )	2 inch x 2 inch NaI (TI) scintillator. Used for measuring external dose rates at the surface and at 1 meter.
Ludlum Model 2221 S/N 84423	Ludlum Model 43-68 100 cm <sup>2</sup> gas flow proportional <b>Beta detector</b> S/N 119444	Four Linear Ranges 0-500,000 & one Log 50-500,000	08-05-02	36.47%	1042 cp2m on concrete MDA = 222 dpm/100 cm <sup>2</sup> MDA = 210 dpm/100 cm <sup>2</sup> @ 36.47%	Active Probe Area = 100 cm <sup>2</sup> . The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick disconnects, a portable gas bottle and a means to adjust the height of the detector.
Ludlum Model 12 S/N 138801	Ludlum Model 43-65 Alpha Scintillator ZnS(Ag) Alpha detector S/N 145696	Four Ranges 0-500,000	05-11-02	22.52%	0-20 cpm (all) MDA = 309 dpm/100 cm <sup>2</sup> 355?	Active Probe Area = 50 cm <sup>2</sup> . Used for Alpha surveying and fixed measurements.
Canberra Low Level α/β Counter Model 2404	Gas Flow Proportional Detector	N/A	As needed	~26-30%	Varies with Sample	Canberra Model 2404 Low Level α/β gas proportional counting system used to count wipes for removable contamination. Results are usually reported as dpm/100 cm <sup>2</sup> .

**Table 3: Building 2 Service Corridor Section C Final Survey List of Instruments**

Instrument	Detector	Range (cpm)	Calibration Due Date	Efficiency	Background	Description												
<b>Suspect Affected Area and Unaffected Area</b>																		
Ludlum Model 2221 S/N 84459	Ludlum Model 43-37 434 cm <sup>2</sup> gas flow proportional <b>Alpha detector</b> S/N 086215	Four Linear Ranges 0-500,000 & one Log 50-500,000	07-07-04	21.58%	<table border="0"> <tr> <td><u>Background</u></td> <td><u>Scan MDA</u></td> </tr> <tr> <td>10-60 cpm</td> <td>112 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>10-30 cpm</td> <td>64 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>0-40 cpm</td> <td>64 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>0-40 cpm</td> <td>64 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>0-40 cpm</td> <td>64 dpm/100 cm<sup>2</sup></td> </tr> </table>	<u>Background</u>	<u>Scan MDA</u>	10-60 cpm	112 dpm/100 cm <sup>2</sup>	10-30 cpm	64 dpm/100 cm <sup>2</sup>	0-40 cpm	64 dpm/100 cm <sup>2</sup>	0-40 cpm	64 dpm/100 cm <sup>2</sup>	0-40 cpm	64 dpm/100 cm <sup>2</sup>	Active Probe Area = 434 cm <sup>2</sup> . The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick disconnects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
<u>Background</u>	<u>Scan MDA</u>																	
10-60 cpm	112 dpm/100 cm <sup>2</sup>																	
10-30 cpm	64 dpm/100 cm <sup>2</sup>																	
0-40 cpm	64 dpm/100 cm <sup>2</sup>																	
0-40 cpm	64 dpm/100 cm <sup>2</sup>																	
0-40 cpm	64 dpm/100 cm <sup>2</sup>																	
Ludlum Model 2221 S/N 84459	Ludlum Model 43-37 434 cm <sup>2</sup> gas flow proportional <b>Alpha detector</b> S/N 086215	Four Linear Ranges 0-500,000 & one Log 50-500,000	07-19-04 08-06-04 01-13-05 07-12-05	22.14% 22.14% 22.14% 22.14%	<table border="0"> <tr> <td><u>Background</u></td> <td><u>Scan MDA</u></td> </tr> <tr> <td>10-60 cpm</td> <td>109 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>10-30 cpm</td> <td>62 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>0-40 cpm</td> <td>62 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>0-40 cpm</td> <td>62 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>0-40 cpm</td> <td>62 dpm/100 cm<sup>2</sup></td> </tr> </table>	<u>Background</u>	<u>Scan MDA</u>	10-60 cpm	109 dpm/100 cm <sup>2</sup>	10-30 cpm	62 dpm/100 cm <sup>2</sup>	0-40 cpm	62 dpm/100 cm <sup>2</sup>	0-40 cpm	62 dpm/100 cm <sup>2</sup>	0-40 cpm	62 dpm/100 cm <sup>2</sup>	Active Probe Area = 434 cm <sup>2</sup> . The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick disconnects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
<u>Background</u>	<u>Scan MDA</u>																	
10-60 cpm	109 dpm/100 cm <sup>2</sup>																	
10-30 cpm	62 dpm/100 cm <sup>2</sup>																	
0-40 cpm	62 dpm/100 cm <sup>2</sup>																	
0-40 cpm	62 dpm/100 cm <sup>2</sup>																	
0-40 cpm	62 dpm/100 cm <sup>2</sup>																	
Ludlum Model 2221 S/N 154202	Ludlum Model 43-37 434 cm <sup>2</sup> gas flow proportional <b>Beta detector</b> S/N 149017	Four Linear Ranges 0-500,000 & one Log 50-500,000	07-06-04 08-06-04 01-28-05	30.39% 30.39% 30.39%	<table border="0"> <tr> <td><u>Background</u></td> <td><u>Scan MDA</u></td> </tr> <tr> <td>1300-2000 cpm</td> <td>375 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>1300-1500 cpm</td> <td>318 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>700-1300 cpm</td> <td>227 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>1000-1400 cpm</td> <td>273 dpm/100 cm<sup>2</sup></td> </tr> <tr> <td>900-1400 cpm</td> <td>262 dpm/100 cm<sup>2</sup></td> </tr> </table>	<u>Background</u>	<u>Scan MDA</u>	1300-2000 cpm	375 dpm/100 cm <sup>2</sup>	1300-1500 cpm	318 dpm/100 cm <sup>2</sup>	700-1300 cpm	227 dpm/100 cm <sup>2</sup>	1000-1400 cpm	273 dpm/100 cm <sup>2</sup>	900-1400 cpm	262 dpm/100 cm <sup>2</sup>	Active Probe Area = 434 cm <sup>2</sup> . The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick disconnects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
<u>Background</u>	<u>Scan MDA</u>																	
1300-2000 cpm	375 dpm/100 cm <sup>2</sup>																	
1300-1500 cpm	318 dpm/100 cm <sup>2</sup>																	
700-1300 cpm	227 dpm/100 cm <sup>2</sup>																	
1000-1400 cpm	273 dpm/100 cm <sup>2</sup>																	
900-1400 cpm	262 dpm/100 cm <sup>2</sup>																	

**Table 3: Building 2 Service Corridor Section C Final Survey List of Instruments**

Instrument	Detector	Range (cpm)	Calibration Due Date	Efficiency	Background	Description
Ludlum Model 2221 S/N 86302	Ludlum Model 43-68 100 cm <sup>2</sup> gas flow proportional <b>Beta detector</b> S/N 142547	Four Linear Ranges 0-500,000 & one Log 50-500,000	05-04-04	31.20%	<u>Fixed Background</u> <u>MDA</u> concrete 822 ± 344 cp2m      218 dpm/100 cm <sup>2</sup> cement block 671 ± 126 cp2m      197 dpm/100 cm <sup>2</sup> metal 435 ± 170 cp2m      160 dpm/100 cm <sup>2</sup> grating 588 ± 141 cp2m      185 dpm/100 cm <sup>2</sup> wood 637 ± 109 cp2m      192 dpm/100 cm <sup>2</sup> <u>Scan Background</u> 320-420 cpm concrete 220-340 cpm cement block 180-280 cpm metal 220-380 cpm wood	Active Probe Area = 100 cm <sup>2</sup> . The detector and rate meter are combined on a roll around cart. The instrument features a static-flow system, quick disconnects and a portable gas bottle.
Ludlum Model 2221 S/N 86302	Ludlum Model 43-68 100 cm <sup>2</sup> gas flow proportional <b>Beta detector</b> S/N 142547	Four Linear Ranges 0-500,000 & one Log 50-500,000	08-18-04 01-13-05	34.36% 34.36%	<u>Fixed Background</u> <u>MDA</u> concrete 948 ± 256 cp2m      212 dpm/100 cm <sup>2</sup> cement block 843 ± 120 cp2m      200 dpm/100 cm <sup>2</sup> metal 576 ± 105cp2m      166 dpm/100 cm <sup>2</sup> grating 588 ± 141 cp2m      168 dpm/100 cm <sup>2</sup> wood 670 ± 116 cp2m      179 dpm/100 cm <sup>2</sup> <u>Scan Background</u> 320-420 cpm concrete 220-340 cpm cement block 180-280 cpm metal 220-380 cpm wood	Active Probe Area = 100 cm <sup>2</sup> . The detector and rate meter are combined on a roll around cart. The instrument features a static-flow system, quick disconnects and a portable gas bottle.

**Table 3: Building 2 Service Corridor Section C Final Survey List of Instruments**

Instrument	Detector	Range (cpm)	Calibration Due Date	Efficiency	Background	Description
Ludlum Model 3 S/N 153551	Ludlum Model 44-10 NaI (TI) Scintillator Gamma detector S/N 155109	Five Ranges 0-500 µR/hr	11-17-03 05-05-04 01-06-05 04-08-05	NA	concrete 15-21 µR/hr contact, 15-21 µR/hr @ 1 m cement block 14-19 µR/hr contact, 14-18 µR/hr @ 1 m metal 9-13 µR/hr contact, 10-13 µR/hr @ 1 m	2 inch x 2 inch NaI (TI) scintillator. Used for measuring external dose rates at the surface and at 1 meter.
Ludlum Model 3 S/N 153590	Ludlum Model 44-10 NaI (TI) Scintillator Gamma detector S/N 155190	Five Ranges 0-500 µR/hr	02-12-04	NA	concrete 15-24 µR/hr contact, 14-22 µR/hr @ 1 m cement block 13-20 µR/hr contact, 13-20 µR/hr @ 1 m metal 9-17 µR/hr contact, 13-19 µR/hr @ 1 m	2 inch x 2 inch NaI (TI) scintillator. Used for measuring external dose rates at the surface and at 1 meter.
Ludlum Model 12 S/N 138801	Ludlum Model 43-65 Alpha Scintillator ZnS(Ag) Alpha detector S/N 145696	Four Ranges 0-500,000	03-11-04 01-05-05 07-08-05	22.52% 22.52% 22.52%	0-20 cpm (all) MDA = 209 dpm/100 cm <sup>2</sup>	Active Probe Area = 50 cm <sup>2</sup> . Used for Alpha surveying and fixed measurements.
Ludlum Model 12 S/N 138738	Ludlum Model 43-5 Alpha Scintillator ZnS(Ag) Alpha detector S/N 073380	Four Ranges 0-500,000	04-30-04	21.02%	0-20 cpm (all) MDA = 222 dpm/100 cm <sup>2</sup>	Active Probe Area = 50 cm <sup>2</sup> . Used for Alpha surveying and fixed measurements.
Ludlum Model 3 S/N 138880	Ludlum Model 44-9 Beta/Gamma detector S/N 117851	Four Ranges 0-600,000	03-11-04 05-10-04 01-28-05	26.14% 26.14% 26.14%	concrete 60-80 cpm cement block 50-80 cpm metal 40-70 cpm wood 40-100 cpm	Active probe area of 15 cm <sup>2</sup> . Used for beta/gamma surveying
Canberra Low Level α/β Counter Model 2404	Gas Flow Proportional Detector	N/A	As needed	~26-30%	Varies with Sample	Canberra Model 2404 Low Level α/β gas proportional counting system used to count wipes for removable contamination. Results are usually reported as dpm/100 cm <sup>2</sup>

**Table 4: Building 2 Service Corridor, Section C, Wipe Sample Analysis Results**

<b>Non-Suspect Affected Area</b> (Note: breaks in sample numbering sequence occurs due to re-classification)					
Sample Number	$\alpha$ in dpm/100 cm <sup>2</sup>	$\beta$ in dpm/100 cm <sup>2</sup>	Sample Number	$\alpha$ in dpm/100 cm <sup>2</sup>	$\beta$ in dpm/100 cm <sup>2</sup>
82	<20	<20	287	<20	<20
83	<20	<20	288	<20	<20
84	<20	<20	289	<20	<20
85	<20	<20	290	<20	<20
86	<20	<20	291	<20	<20
87	<20	<20	292	<20	<20
88	<20	<20	293	<20	<20
89	<20	<20	298	<20	<20
90	<20	<20	299	<20	<20
91	<20	<20	300	<20	<20
92	<20	<20	301	<20	<20
93	<20	<20	302	<20	<20
94	<20	<20	303	<20	<20
95	<20	<20	388	<20	<20
96	<20	<20	389	<20	<20
112	<20	<20	394	<20	<20
113	<20	<20	395	<20	<20
114	<20	<20	396	<20	<20
115	<20	<20	397	<20	<20
116	<20	<20	398	<20	<20
117	<20	<20	399	<20	<20
118	<20	<20	400	<20	<20
119	<20	<20	401	<20	<20
120	<20	<20	402	<20	<20
121	<20	<20	403	<20	<20

**Table 4: Building 2 Service Corridor, Section C, Wipe Sample Analysis Results**

<b>Non-Suspect Affected Area</b> (Note: breaks in sample numbering sequence occurs due to re-classification)					
Sample Number	$\alpha$ in dpm/100 cm <sup>2</sup>	$\beta$ in dpm/100 cm <sup>2</sup>	Sample Number	$\alpha$ in dpm/100 cm <sup>2</sup>	$\beta$ in dpm/100 cm <sup>2</sup>
122	<20	<20	412	<20	<20
123	<20	<20	413	<20	<20
262	<20	<20	414	<20	<20
263	<20	<20	415	<20	<20
268	<20	<20	416	<20	<20
269	<20	<20	417	<20	<20
270	<20	<20	418	<20	<20
271	<20	<20	419	<20	<20
272	<20	<20	424	<20	<20
273	<20	<20	425	<20	<20
274	<20	<20	426	<20	<20
275	<20	<20	427	<20	<20
276	<20	<20	428	<20	<20
277	<20	<20	429	<20	<20
286	<20	<20		<20	<20

**Table 5: Building 2 Section C Service Corridor Wipe Results**  
**Suspect Affected and Non-Impacted Areas**  
(Wipe results in dpm/100cm<sup>2</sup>)

First (Lower Level) Suspect Affected				
#	α	β	Location	Figure #
1	<20	<20	C51-54 inner wall	102
2	<20	<20	C51-54 inner wall	102
3	<20	<20	C51-54 inner wall	102
4	<20	<20	C51-54 inner wall	102
5	<20	<20	C51-54 inner wall	102
6	<20	<20	C54 door	105
7	<20	<20	C54-57 inner wall	105
8	<20	<20	C54-57 inner wall	105
9	<20	<20	C54-57 inner wall	105
10	<20	<20	C54-57 inner wall	105
11	<20	<20	C54-57 inner wall	105
12	<20	<20	C57-60 inner wall	108
13	<20	<20	C57-60 inner wall	108
14	<20	<20	C57-60 inner wall	108
15	<20	<20	C57-60 inner wall	108
16	<20	<20	C57-60 inner wall	108
17	<20	<20	C51-54 outer wall	103
18	<20	<20	C51-54 outer wall	103
19	<20	<20	C51-54 outer wall	103
20	<20	<20	C51-54 outer wall	103
21	<20	<20	C51-54 outer wall	103
22	<20	<20	C54-57 outer wall	106
23	<20	<20	C54-57 outer wall	106
24	<20	<20	C54-57 outer wall	106
25	<20	<20	C54-57 outer wall	106
26	<20	<20	C54-57 outer wall	106
27	<20	<20	C57-60 outer wall	109
28	<20	<20	C57-60 outer wall	109
29	<20	<20	C57-60 outer wall	109
30	<20	<20	C57-60 outer wall	109
31	<20	<20	C57-60 outer wall	109

32	<20	<20	C51-54 floor	101
33	<20	<20	C51-54 floor	101
34	<20	<20	C51-54 floor	101
35	<20	<20	C51-54 floor	101
36	<20	<20	C54-57 floor	104
37	<20	<20	C54-57 floor	104
38	<20	<20	C54-57 floor	104
39	<20	<20	C54-57 floor	104
40	<20	<20	C54-57 floor	104
41	<20	<20	C57-60 floor	107
42	<20	<20	C57-60 floor	107
43	<20	<20	C57-60 floor	107
44	<20	<20	C57-60 floor	107
45	<20	<20	C57-60 floor	107
46	<20	<20	C64-67 inner wall	111
47	<20	<20	C64-67 inner wall	111
48	<20	<20	C64-67 inner wall	111
49	<20	<20	C64-67 inner wall	111
50	<20	<20	C64-67 inner wall	111
51	<20	<20	C67-69 inner wall	114
52	<20	<20	C67-69 inner wall	114
53	<20	<20	C67-69 inner wall	114
54	<20	<20	C74-C1 inner wall	117
55	<20	<20	C74-C1 inner wall	117
56	<20	<20	C74-C1 inner wall	117
57	<20	<20	C74-C1 inner wall	117
58	<20	<20	C64-67 outer wall	112
59	<20	<20	C64-67 outer wall	112
60	<20	<20	C64-67 outer wall	112
61	<20	<20	C64-67 outer wall	112
62	<20	<20	C64-67 outer wall	112
63	<20	<20	C67-69 outer wall	115
64	<20	<20	C67-69 outer wall	115

**Table 5: Building 2 Section C Service Corridor Wipe Results**  
**Suspect Affected and Non-Impacted Areas**  
(Wipe results in dpm/100cm<sup>2</sup>)

65	<20	<20	C67-69 outer wall	115
66	<20	<20	C74-C1 outer wall	118
67	<20	<20	C74-C1 outer wall	118
68	<20	<20	C74-C1 outer wall	118
69	<20	<20	C74-C1 outer wall	118
70	<20	<20	C64-67 floor	110
71	<20	<20	C64-67 floor	110
72	<20	<20	C64-67 floor	110
73	<20	<20	C64-67 floor	110
74	<20	<20	C67-69 floor	113
75	<20	<20	C67-69 floor	113
76	<20	<20	C67-69 floor	113
77	<20	<20	C67-69 floor	113
78	<20	<20	C74-C1 floor	116
79	<20	<20	C74-C1 floor	116
80	<20	<20	C74-C1 floor	116
81	<20	<20	C74-C1 floor	116
Second (Middle) Level Suspect Affected				
#	α	β	Location	Figure #
1	<20	<20	C51-53 inner wall	120
2	<20	<20	C51-53 inner wall	120
3	<20	<20	C51-53 inner wall	120
4	<20	<20	C51-53 floor	119
5	<20	<20	C51-53 outer wall	121
6	<20	<20	C51-53 outer wall	121
7	<20	<20	C51-53 outer wall	121
8	<20	<20	C51-53 outer wall	121
9	<20	<20	C56-58 inner wall	123
10	<20	<20	C56-58 inner wall	123
11	<20	<20	C56-58 inner wall	123
12	<20	<20	C56-58 floor	122
13	<20	<20	C56-58 outer wall	124

14	<20	<20	C56-58 outer wall	124
15	<20	<20	C56-58 outer wall	124
16	<20	<20	C64-66 inner wall	126
17	<20	<20	C64-66 inner wall	126
18	<20	<20	C64-66 inner wall	126
19	<20	<20	C66-68 inner wall	129
20	<20	<20	C66-68 inner wall	129
21	<20	<20	C66-68 inner wall	129
22	<20	<20	C64-66 floor	125
23	<20	<20	C64-66 floor	125
24	<20	<20	C64-66 floor	125
25	<20	<20	C66-68 floor	128
26	<20	<20	C66-68 floor	128
27	<20	<20	C66-68 floor	128
28	<20	<20	C64-66 outer wall	127
29	<20	<20	C64-66 outer wall	127
30	<20	<20	C64-66 outer wall	127
31	<20	<20	C66-68 outer wall	130
32	<20	<20	C66-68 outer wall	130
33	<20	<20	C66-68 outer wall	130
34	<20	<20	C73-75 inner wall	132
35	<20	<20	C73-75 inner wall	132
36	<20	<20	C73-75 inner wall	132
37	<20	<20	C73-75 floor	131
38	<20	<20	C73-75 floor	131
39	<20	<20	C73-75 floor	131
40	<20	<20	C73-75 outer wall	133
41	<20	<20	C73-75 outer wall	133
42	<20	<20	C73-75 outer wall	133
C 51 Doors Suspect Affected				
#	α	β	Location	Figure #
1	<20	<20	Wall	120

**Table 5: Building 2 Section C Service Corridor Wipe Results**  
**Suspect Affected and Non-Impacted Areas**  
(Wipe results in dpm/100cm<sup>2</sup>)

2	<20	<20	Door	120
3	<20	<20	Door	120
4	<20	<20	Wall	120
C 64 Doors Suspect Affected				
#	$\alpha$	$\beta$	Location	Figure #
1	<20	<20	Wall	126
2	<20	<20	Door	126
3	<20	<20	Door	126
4	<20	<20	Wall	126
Electrical Room C Non-Impacted				
#	$\alpha$	$\beta$	Location	Figure #
1	<20	<20	Floor	4
2	<20	<20	Wall	4
3	<20	<20	Wall	4
4	<20	<20	Floor	4
Elevator Room C Non-Impacted				
#	$\alpha$	$\beta$	Location	Figure #
5	<20	<20	Floor	7
Ventilation Room C Non-Impacted				
#	$\alpha$	$\beta$	Location	Figure #
1	<20	<20	Floor	8
2	<20	<20	Wall	8
3	<20	<20	Wall	8
4	<20	<20	Floor	8
5	<20	<20	Wall	8
Louvered Wall External Surfaces				
#	$\alpha$	$\beta$	Location	Figure #
1	<20	<20	B50 to C51	18
2	<20	<20	B50 to C51	18
3	<20	<20	B50 to C51	18
4	<20	<20	B50 to C51	18

5	<20	57	C51 to C52	18
6	<20	<20	C51 to C52	18
7	<20	<20	C51 to C52	18
8	<20	<20	C51 to C52	18
9	<20	<20	C52 to C53	18
10	<20	<20	C52 to C53	18
11	<20	<20	C53 to C54	18
12	<20	<20	C53 to C54	18
13	<20	<20	C53 to C54	18
14	<20	<20	C53 to C54	18
15	<20	<20	C54 to C55	18
16	<20	<20	C54 to C55	18
17	<20	<20	C54 to C55	18
18	<20	<20	C54 to C55	18
19	<20	<20	C55 to C56	18
20	<20	<20	C55 to C56	18
21	<20	<20	C55 to C56	18
22	<20	<20	C55 to C56	18
23	<20	<20	C56 to C57	18
24	<20	<20	C56 to C57	18
25	<20	<20	C56 to C57	18
26	<20	<20	C56 to C57	18
27	<20	25	C57 to C58	18
28	<20	<20	C57 to C58	18
29	<20	<20	C57 to C58	18
30	<20	<20	C57 to C58	18
31	<20	<20	C58 to C59	18
32	<20	<20	C58 to C59	18
33	<20	<20	C58 to C59	18
34	<20	<20	C58 to C59	18
37	<20	<20	C59 to C60	18

Table 5: Building 2 Section C Service Corridor Wipe Results  
 Suspect Affected and Non-Impacted Areas  
 (Wipe results in dpm/100cm<sup>2</sup>)

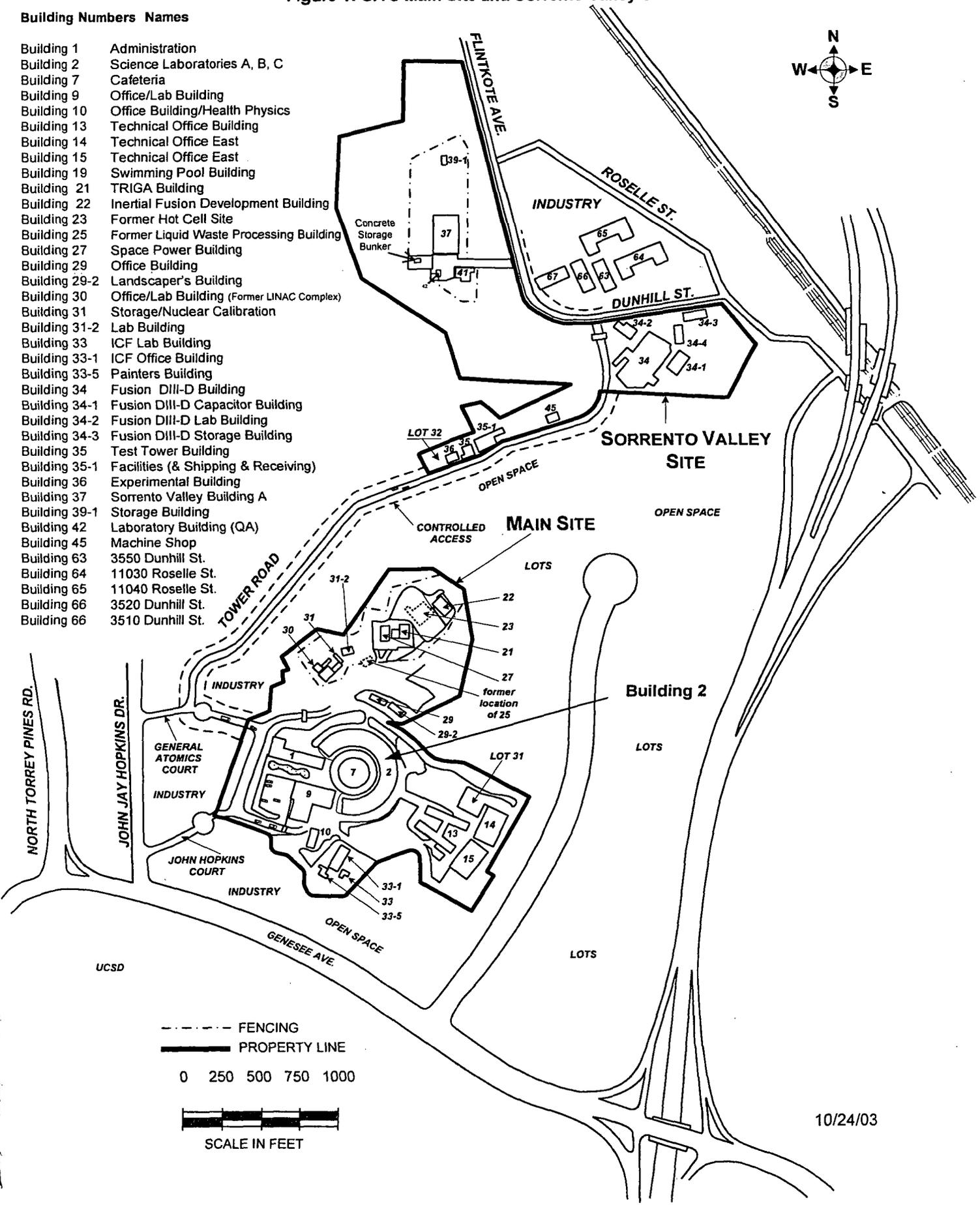
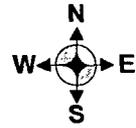
Louvered Wall External Surfaces (cont.)				
#	α	β	Location	Figure #
38	<20	<20	C59 to C60	18
39	<20	<20	C60 to C61	18
40	<20	<20	C60 to C61	18
41	<20	25	C60 to C61	18
42	<20	<20	C60 to C61	18
43	<20	<20	C61 to C62	18
44	<20	<20	C61 to C62	18
45	<20	<20	C61 to C62	18
46	<20	<20	C61 to C62	18
47	<20	<20	C62 to C63	18
48	<20	<20	C62 to C63	18
49	<20	<20	C62 to C63	18
50	<20	<20	C62 to C63	18
51	<20	<20	C63 to C64	18
52	<20	<20	C63 to C64	18
53	<20	<20	C63 to C64	18
54	<20	<20	C63 to C64	18
55	<20	<20	C64 to C65	18
56	<20	<20	C64 to C65	18
57	<20	<20	C64 to C65	18
58	<20	<20	C64 to C65	18
59	<20	<20	C65 to C66	18
60	<20	<20	C65 to C66	18
61	<20	<20	C65 to C66	18
62	<20	<20	C65 to C66	18
63	<20	<20	C66 to C67	18
64	<20	<20	C66 to C67	18
65	<20	<20	C66 to C67	18
66	<20	<20	C66 to C67	18
67	<20	<20	C67 to C68	18
68	<20	<20	C67 to C68	18
69	<20	<20	C67 to C68	18

70	<20	<20	C67 to C68	18
71	<20	<20	C68 to C69	18
72	<20	<20	C68 to C69	18
73	<20	<20	C68 to C69	18
74	<20	<20	C68 to C69	18
75	<20	<20	C69 to C70	18
76	<20	<20	C69 to C70	18
77	<20	<20	C69 to C70	18
78	<20	<20	C69 to C70	18
79	<20	<20	C70 to C71	18
80	<20	<20	C70 to C71	18
81	<20	<20	C70 to C71	18
82	<20	<20	C70 to C71	18
83	<20	<20	C71 to C72	18
84	<20	<20	C71 to C72	18
85	<20	<20	C71 to C72	18
86	<20	<20	C71 to C72	18
87	<20	<20	C72 to C73	18
88	<20	<20	C72 to C73	18
89	<20	<20	C72 to C73	18
90	<20	<20	C72 to C73	18
91	<20	<20	C73 to C74	18
92	<20	<20	C73 to C74	18
93	<20	<20	C73 to C74	18
94	<20	<20	C73 to C74	18
95	<20	<20	C74 to C75	18
96	<20	<20	C74 to C75	18
97	<20	<20	C74 to C75	18
98	<20	<20	C74 to C75	18
99	<20	<20	C75 to C1	18
100	<20	<20	C75 to C1	18
101	<20	<20	C75 to C1	18
102	<20	<20	C75 to C1	18

Figure 1: GA's Main Site and Sorrento Valley Site

Building Numbers Names

- Building 1 Administration
- Building 2 Science Laboratories A, B, C
- Building 7 Cafeteria
- Building 9 Office/Lab Building
- Building 10 Office Building/Health Physics
- Building 13 Technical Office Building
- Building 14 Technical Office East
- Building 15 Technical Office East
- Building 19 Swimming Pool Building
- Building 21 TRIGA Building
- Building 22 Inertial Fusion Development Building
- Building 23 Former Hot Cell Site
- Building 25 Former Liquid Waste Processing Building
- Building 27 Space Power Building
- Building 29 Office Building
- Building 29-2 Landscaper's Building
- Building 30 Office/Lab Building (Former LINAC Complex)
- Building 31 Storage/Nuclear Calibration
- Building 31-2 Lab Building
- Building 33 ICF Lab Building
- Building 33-1 ICF Office Building
- Building 33-5 Painters Building
- Building 34 Fusion DIII-D Building
- Building 34-1 Fusion DIII-D Capacitor Building
- Building 34-2 Fusion DIII-D Lab Building
- Building 34-3 Fusion DIII-D Storage Building
- Building 35 Test Tower Building
- Building 35-1 Facilities (& Shipping & Receiving)
- Building 36 Experimental Building
- Building 37 Sorrento Valley Building A
- Building 39-1 Storage Building
- Building 42 Laboratory Building (QA)
- Building 45 Machine Shop
- Building 63 3550 Dunhill St.
- Building 64 11030 Roselle St.
- Building 65 11040 Roselle St.
- Building 66 3520 Dunhill St.
- Building 66 3510 Dunhill St.



--- FENCING  
 ——— PROPERTY LINE  
 0 250 500 750 1000

SCALE IN FEET

10/24/03

Figure 2A: GA's Building 2

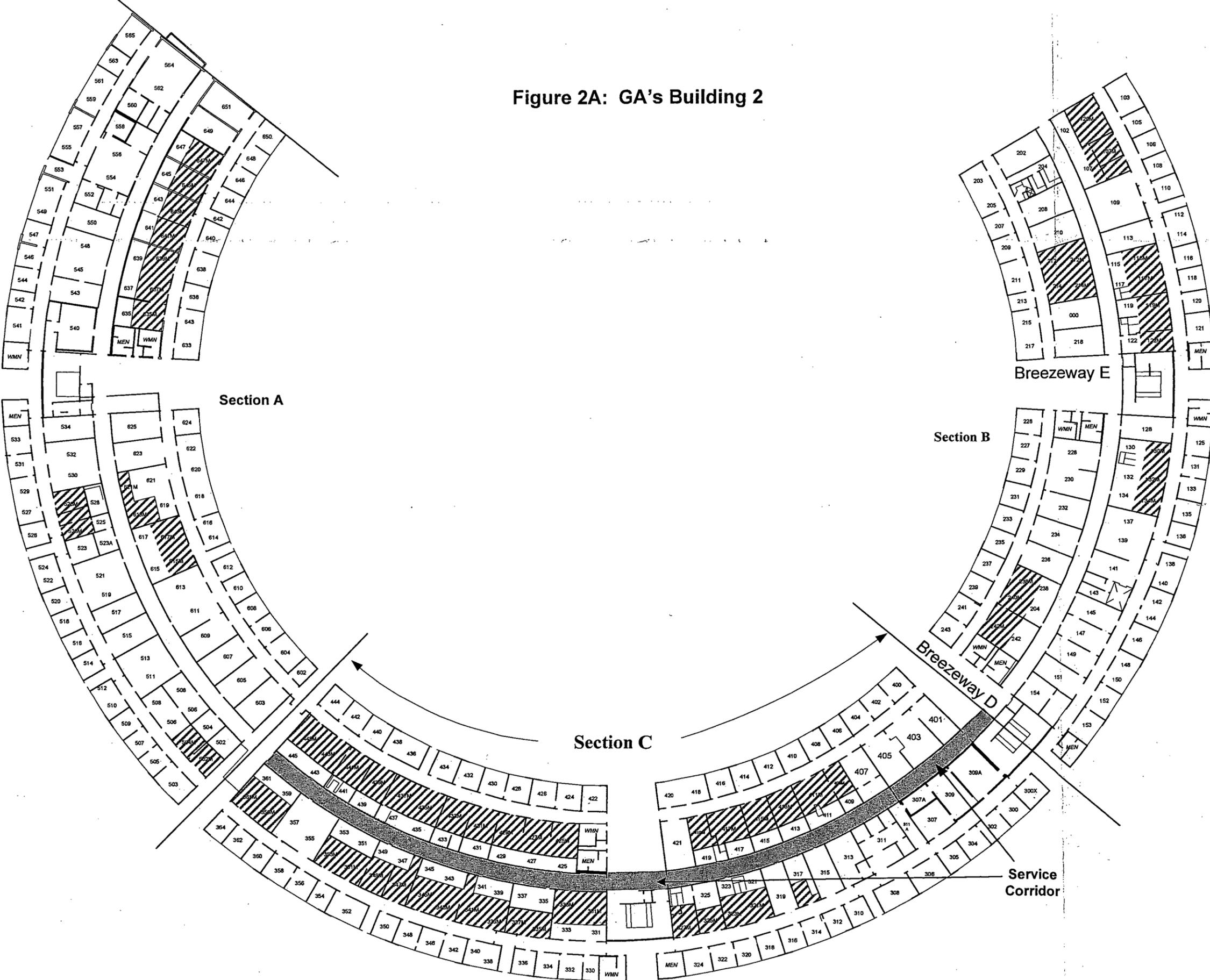
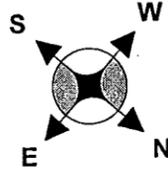
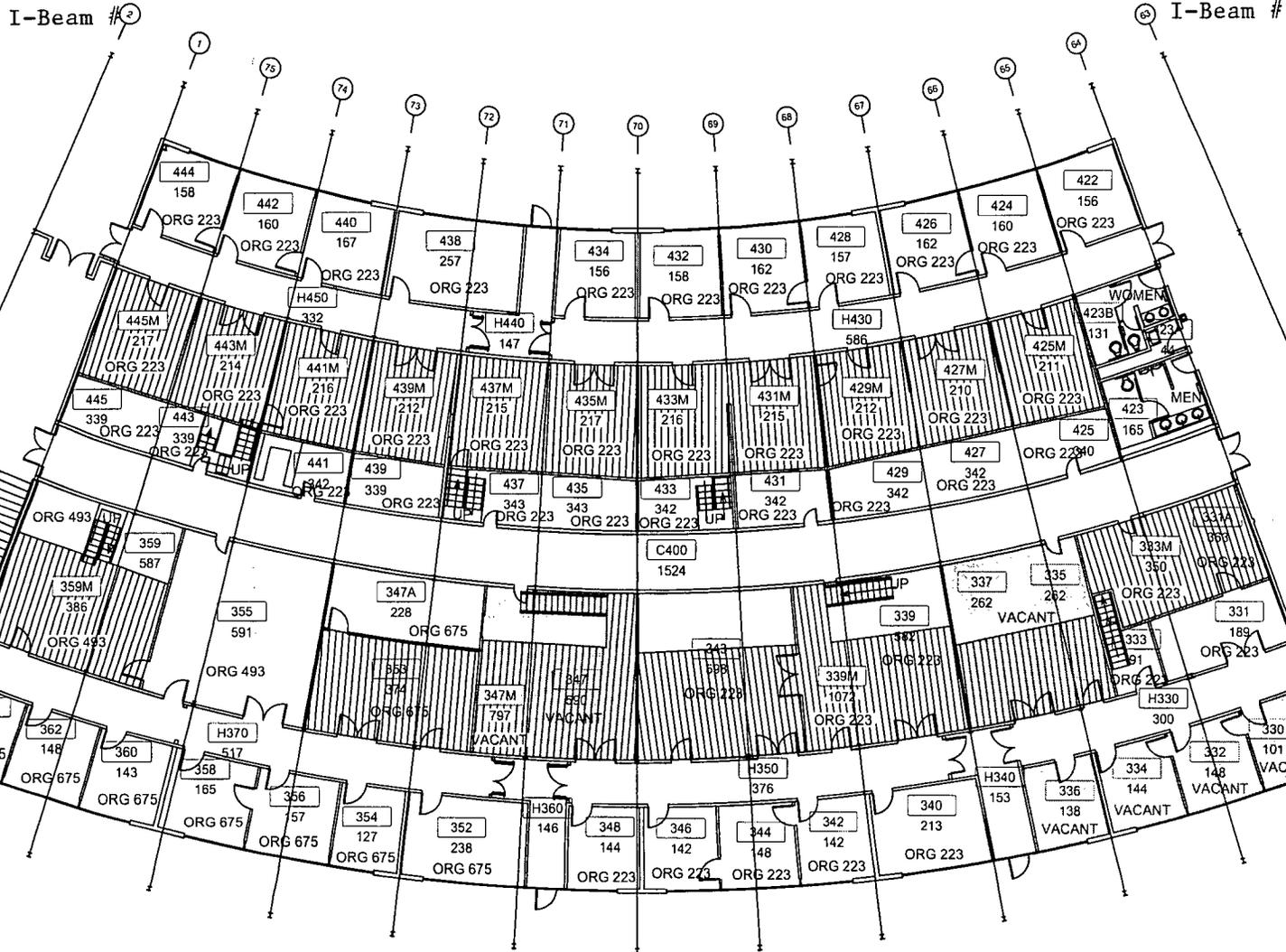


Figure 2A



Figure 2C: Section C of the Building 2 Service Corridor



SCALE: 1/16" = 1' AT 11X17

VACANT

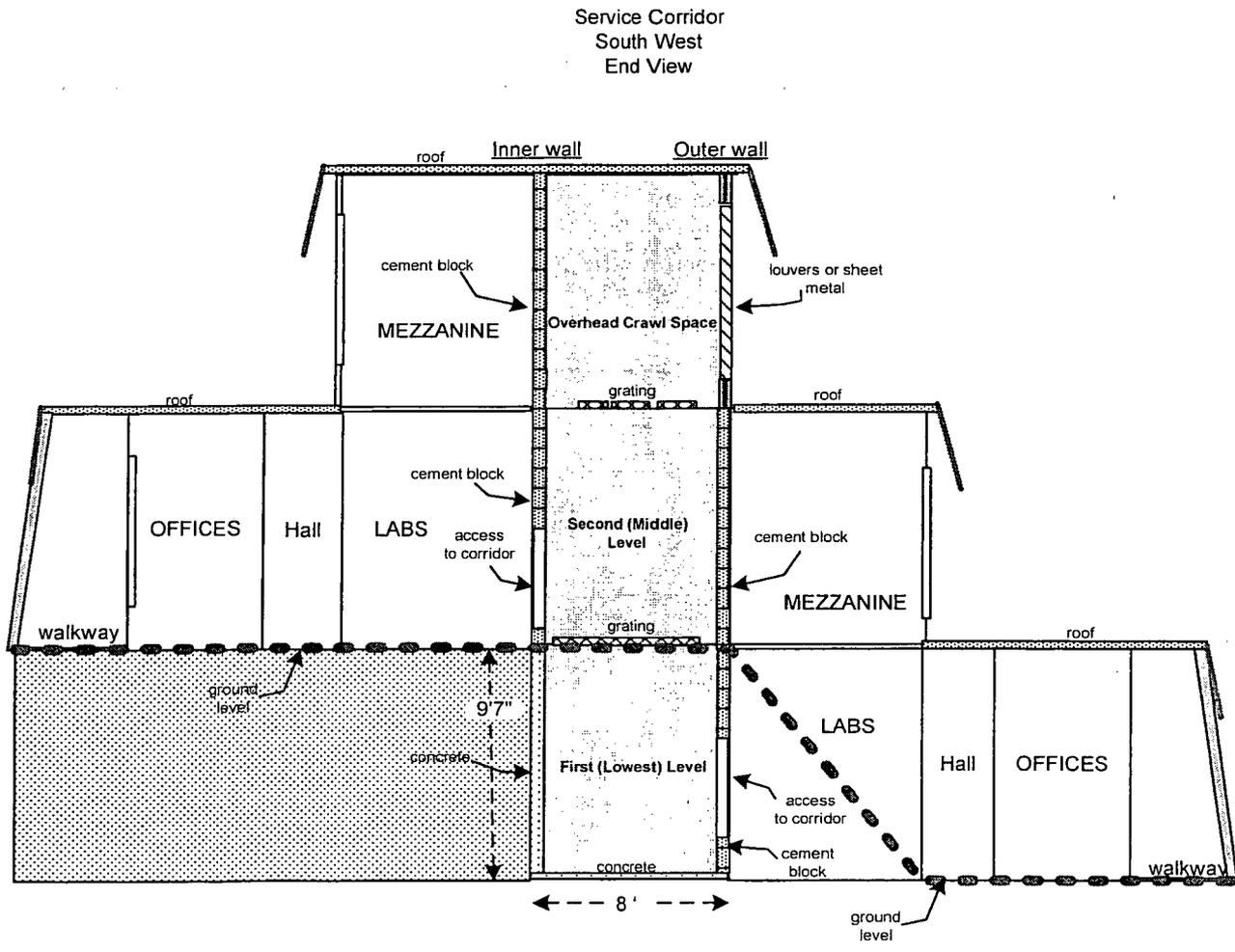
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BUILDING: BUILDING 02  
 FLOOR: 330 - 364 & 422 - 445  
 DESCRIPTION: OCCUPANCY

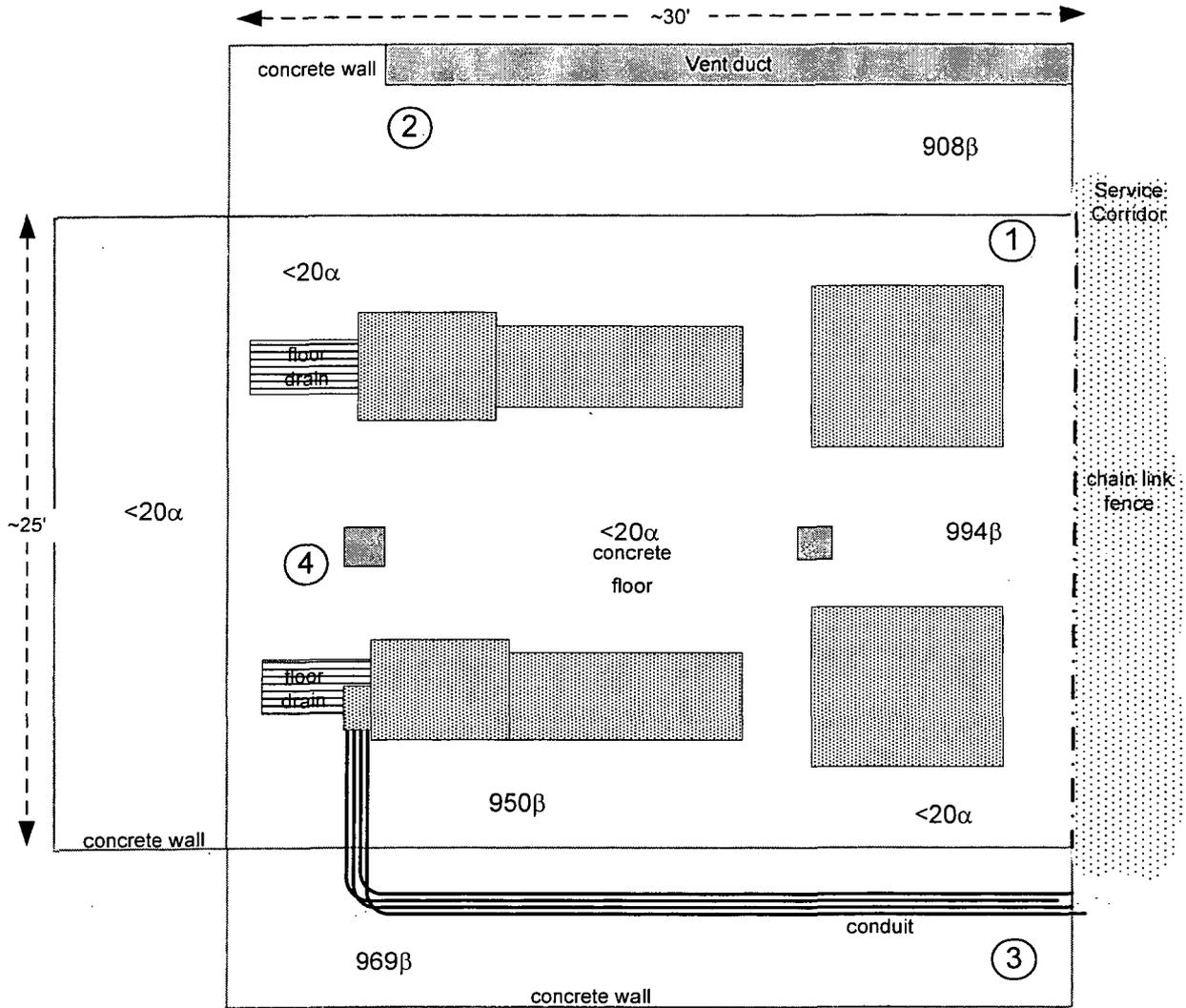
DATE: 09/30/05  
 SHEET NO: 04  
 FAC. ENG. NO: OCC-02

Figure 3: Building 2 End View



Drawing NOT to Scale

Figure 4: Building 2 Service Corridor Section C Electrical Room  
Alpha and Beta Fixed Measurement Locations and Results and Wipe Survey Locations



Notes:

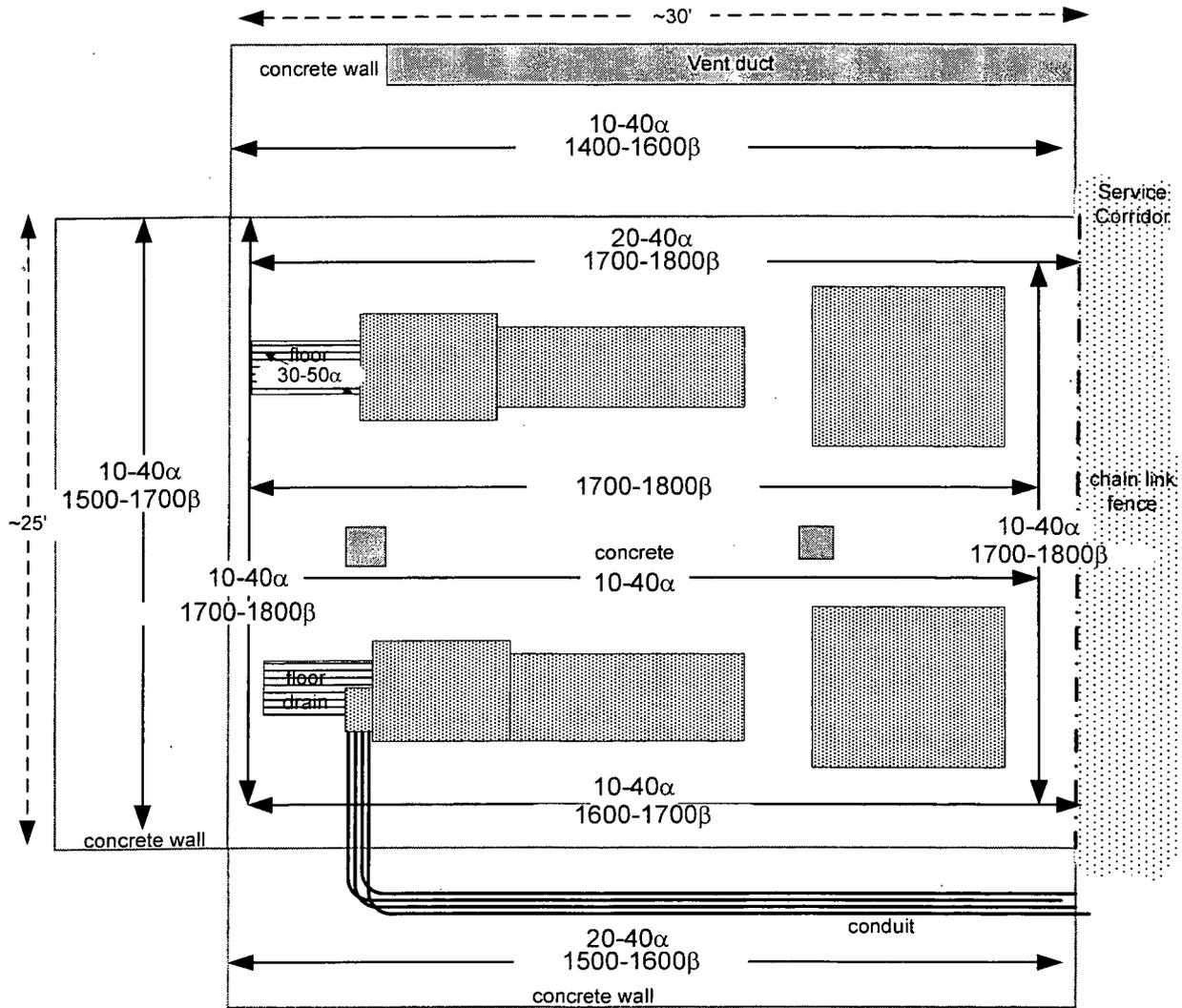
1.  $\#\#\alpha$  Denotes alpha fixed measurement in cpm. All measurements  $<20$  cpm.
2.  $\#\#\beta$  Denotes beta fixed measurement in cp2m. Maximum measurement was 994 cp2m, 275 dpm/100cm<sup>2</sup>.
3.  $\textcircled{\#}$  Denotes wipe location, wipe results are provided in Table 5.

Model	Instruments	
	Ludlum 12	Ludlum 2221
Serial Number	138801	86302
Probe	50 cm <sup>2</sup> $\alpha$	100 cm <sup>2</sup> $\beta$
Probe Serial #	145696	142547
Cal Due Date	03-11-04	05-04-04
Efficiency	22.52 %	31.20%
Background	$<20$ cpm	822 $\pm$ 344 cp2m
MDA	209 dpm/100 cm <sup>2</sup>	218 dpm/100cm <sup>2</sup>

Surveys conducted by: R. Stowell & G. Sayer  
Date: 01-15-04

Figure 4

Figure 5: Building 2 Service Corridor Section C Electrical Room  
Alpha and Beta Scan Measurement Locations and Results



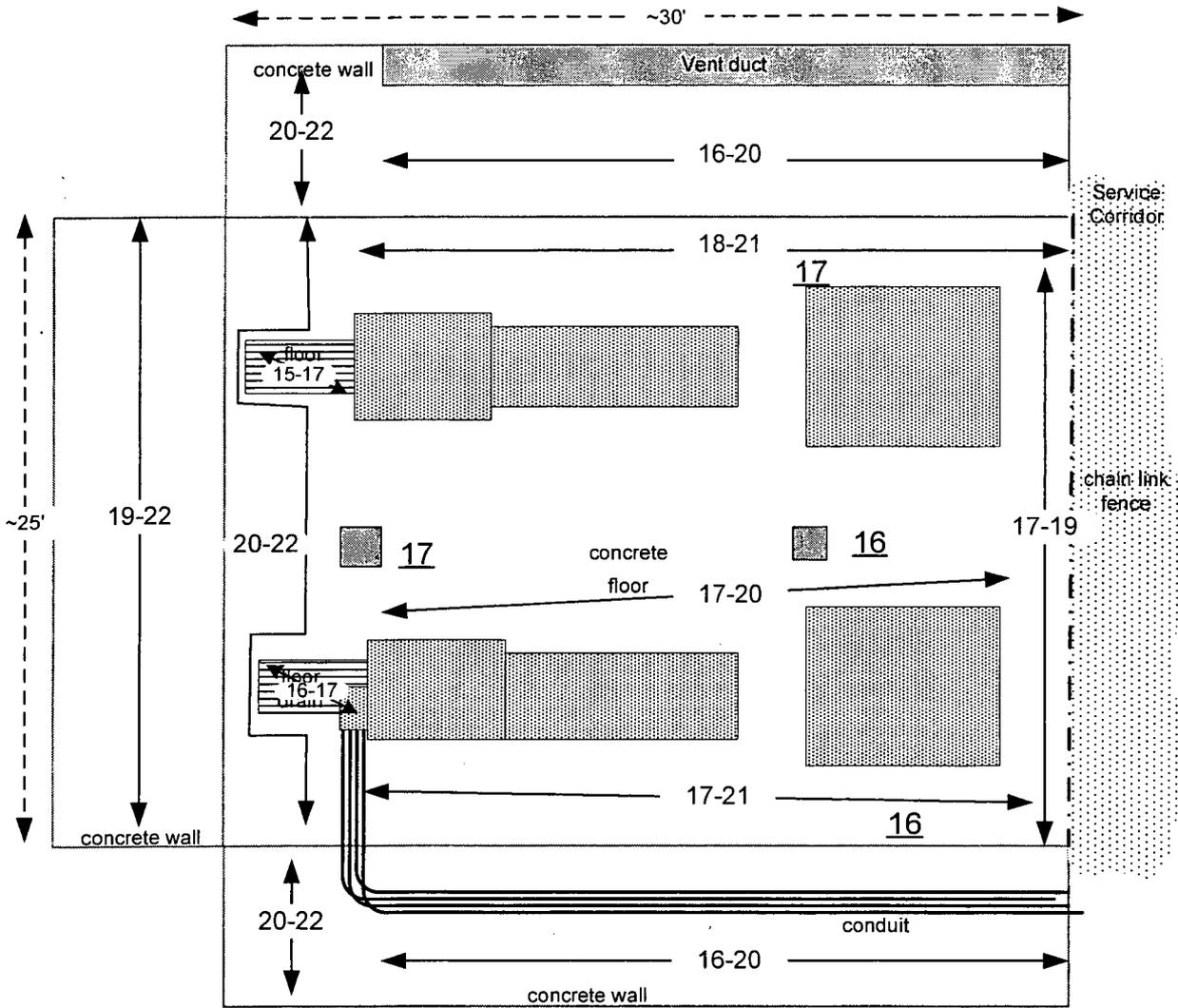
Notes:

1. 10% of floor and walls 2 meters and below scanned.
2.  $\leftarrow \#-\#\alpha \rightarrow$  Denotes alpha scan in cpm.
3.  $\leftarrow \#-\#\beta \rightarrow$  Denotes beta scan in cpm.

Instruments		
Model	Ludlum 2221	Ludlum 2221
Serial Number	84459	154202
Probe	434 cm <sup>2</sup> α	434 cm <sup>2</sup> β
Probe Serial #	086215	149017
Cal Due Date	07-07-04	07-06-04
Efficiency	21.58 %	30.39 %
Background	10-60 cpm	1300-2000
Scan MDA	112 dpm/100 cm <sup>2</sup>	375 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & R. Stowell  
Date: 01-15-04

Figure 6: Building 2 Service Corridor Section C Electrical Room  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



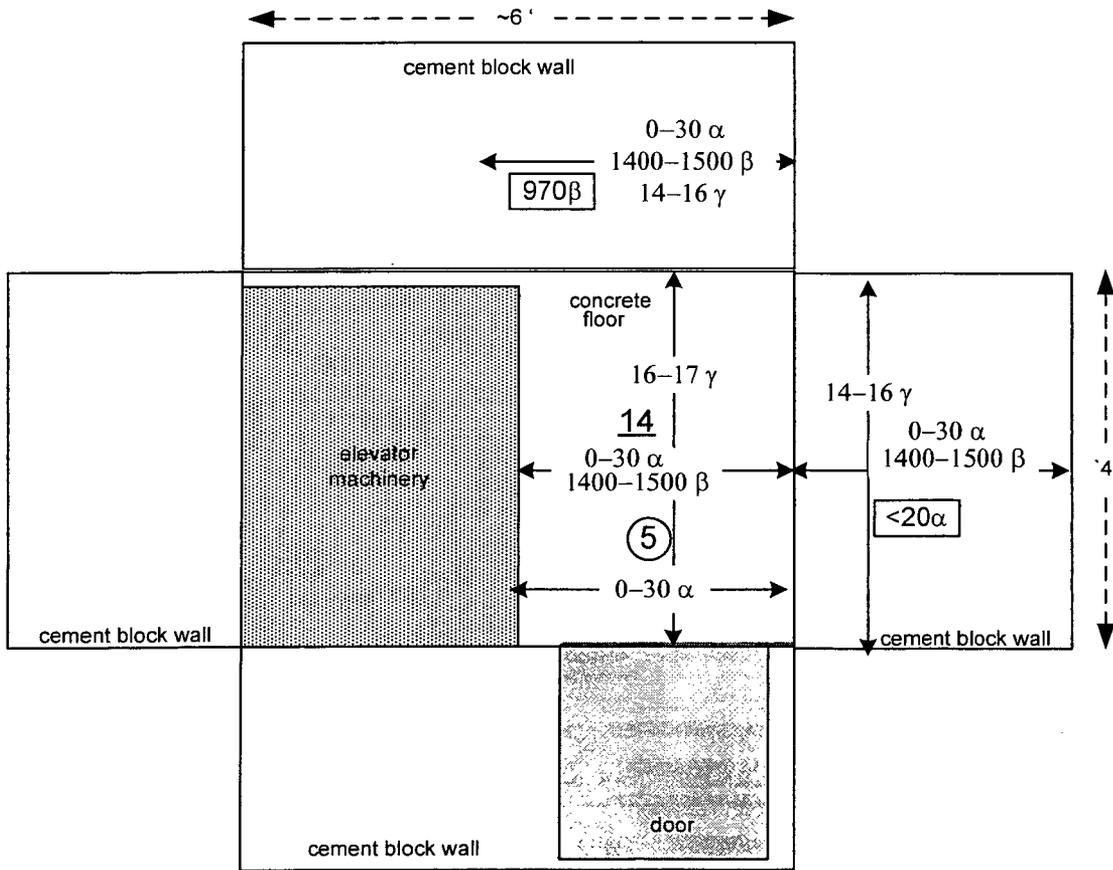
Notes:

1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken at  $\sim 1$  meter from the surface.
2. **← ## →** Denotes exposure rate surface scan in  $\mu\text{R/hr}$ .
3. 10% of floor and walls 2 meters and below were scanned.

Instrument	
Model	Ludlum 3
Serial Number	153590
Probe	2" X 2" NaI $\gamma$
Probe Serial #	155190
Cal Due Date	02-12-04
Bkgd contact	15-24 $\mu\text{R/hr}$
Bkgd @1 meter	14-22 $\mu\text{R/hr}$

Survey conducted by: R Stowell  
 Date: 01-15-04

Figure 7: Building 2 Service Corridor Section C Elevator Machinery Room Breezeway C Final Surveys



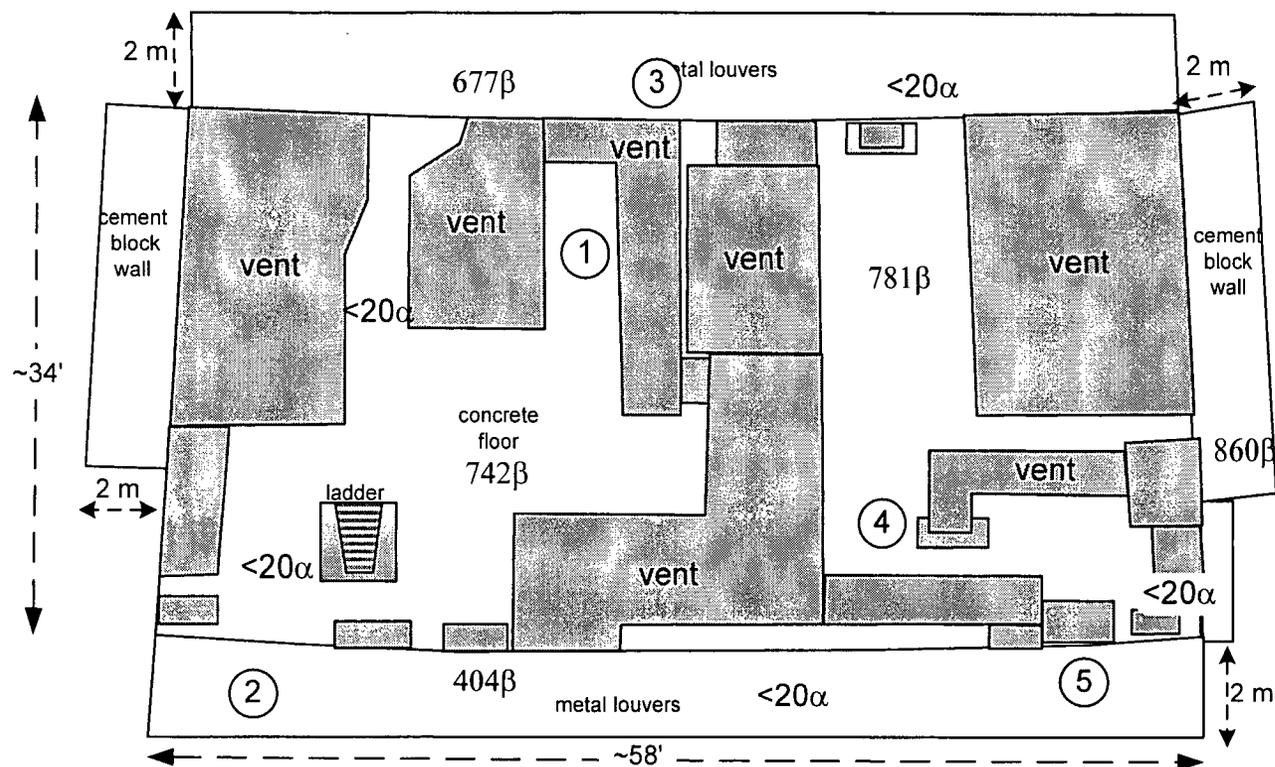
Instruments					
Model	Ludlum 12	Ludlum 2221	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	138801	86302	84459	154202	153590
Probe	50 cm <sup>2</sup> α	100 cm <sup>2</sup> b	434 cm <sup>2</sup> α	434 cm <sup>2</sup> β	2" X 2" NaI γ
Probe Serial #	145696	142547	086215	149017	155190
Cal Due Date	03-11-04	05-04-04	07-07-04	07-06-04	02-12-04
Efficiency %	22.52	31.20	21.58	30.39	N/A
Bkgd. concrete	<20 cpm	822+/-344 cp2m	10-60 cpm	1300-2000 cpm	cont. 15-24 μR/hr
MDA concrete	209 dpm/100 cm <sup>2</sup>	218 dpm/100 cm <sup>2</sup>	112 dpm/100 cm <sup>2</sup>	375 dpm/100 cm <sup>2</sup>	@1m 14-22 μR/hr
Bkgd cement blk	<20 cpm	671+/-126 cp2m	10-30 cpm	1300-1500 cpm	cont. 13-20 μR/hr
MDA cement blk	209 dpm/100 cm <sup>2</sup>	197 dpm/100 cm <sup>2</sup>	64 dpm/100 cm <sup>2</sup>	318 dpm/100 cm <sup>2</sup>	@1m 13-20 μR/hr

Notes:

1. Alpha, beta and exposure rate scans of 10% of the floor and walls 2 meters and below. ##α-alpha scan in cpm, ##β-beta scan in cpm and #γ-exposure rate scan in μR/hr.
2. ## Denotes exposure rate fixed measurement in μR/hr at 1 meter.
3. ##α Denotes alpha fixed measurement in cpm. Maximum measurement was <20 cpm.
4. ###β Denotes beta fixed measurement in cp2m. Maximum measurement was 970 cp2m, 479 dpm/100 cm<sup>2</sup>.
5. # Denotes wipe location. Wipe results are provided in Table 5.

Surveys conducted by: G Sayer & R. Stowell  
Date: 01-15-04

Figure 8: Building 2 Service Corridor Section C Vent Room Above Breezeway C  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



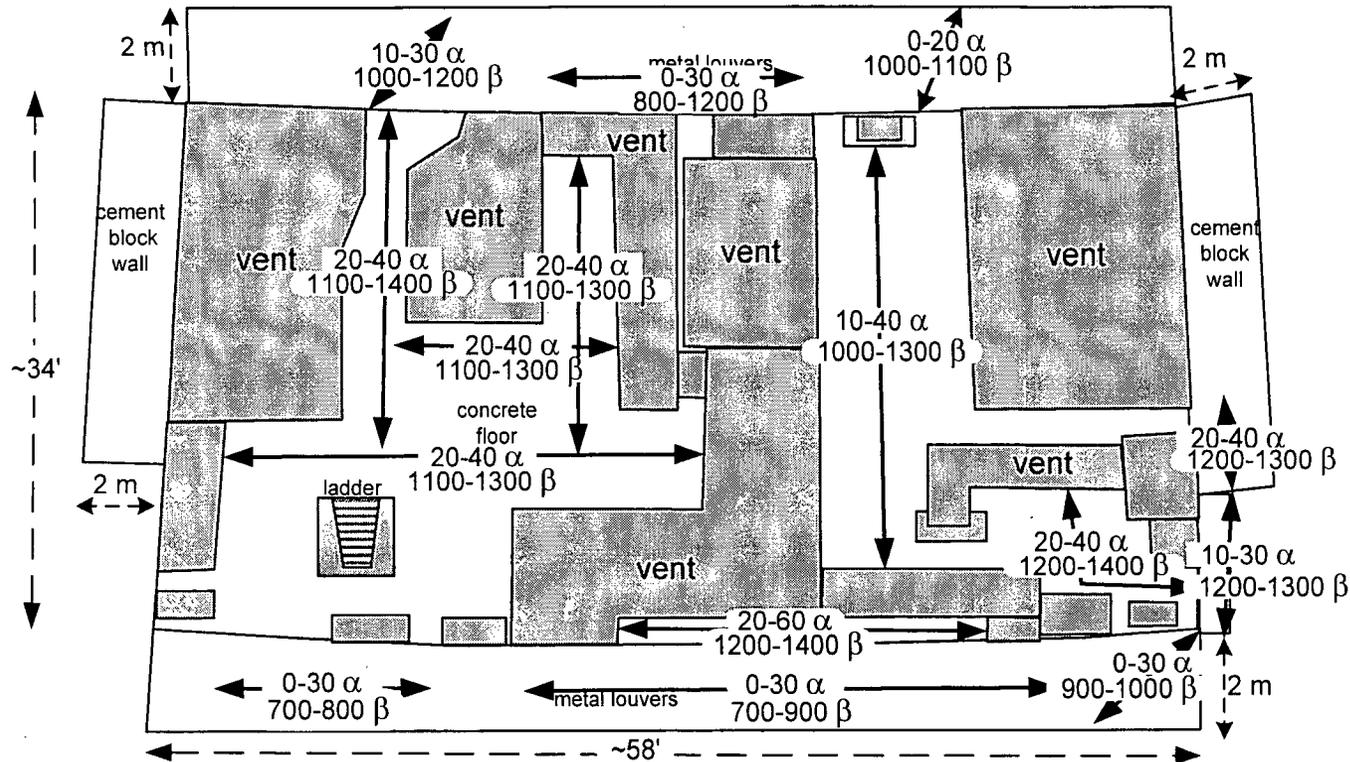
Notes:

1.  $##\alpha$  Denotes fixed alpha measurement in cpm. All measurements <20 cpm.
2.  $###\beta$  Denotes fixed beta measurement in cp2m. Maximum measurement was 860 cp2m, 303 dpm/100 cm<sup>2</sup>.
3.  $\textcircled{\#}$  Denotes wipe location. Wipe results are provided in Table 5.

Surveys conducted by R. Stowell & G. Sayer  
Date: 01-14-04

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	05-04-04	03-11-04
Efficiency %	31.20	22.52
Bkgd. concrete	822+/- 344 cp2m	<20 cpm
MDA	218 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd. cem. block	671+/-126 cp2m	<20 cpm
MDA	197 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd. metal	435+/-170 cp2m	<20 cpm
MDA	160 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Figure 9: Building 2 Service Corridor Section C Vent Room Above Breezeway C  
Alpha and Beta Scan Measurement Locations and Results



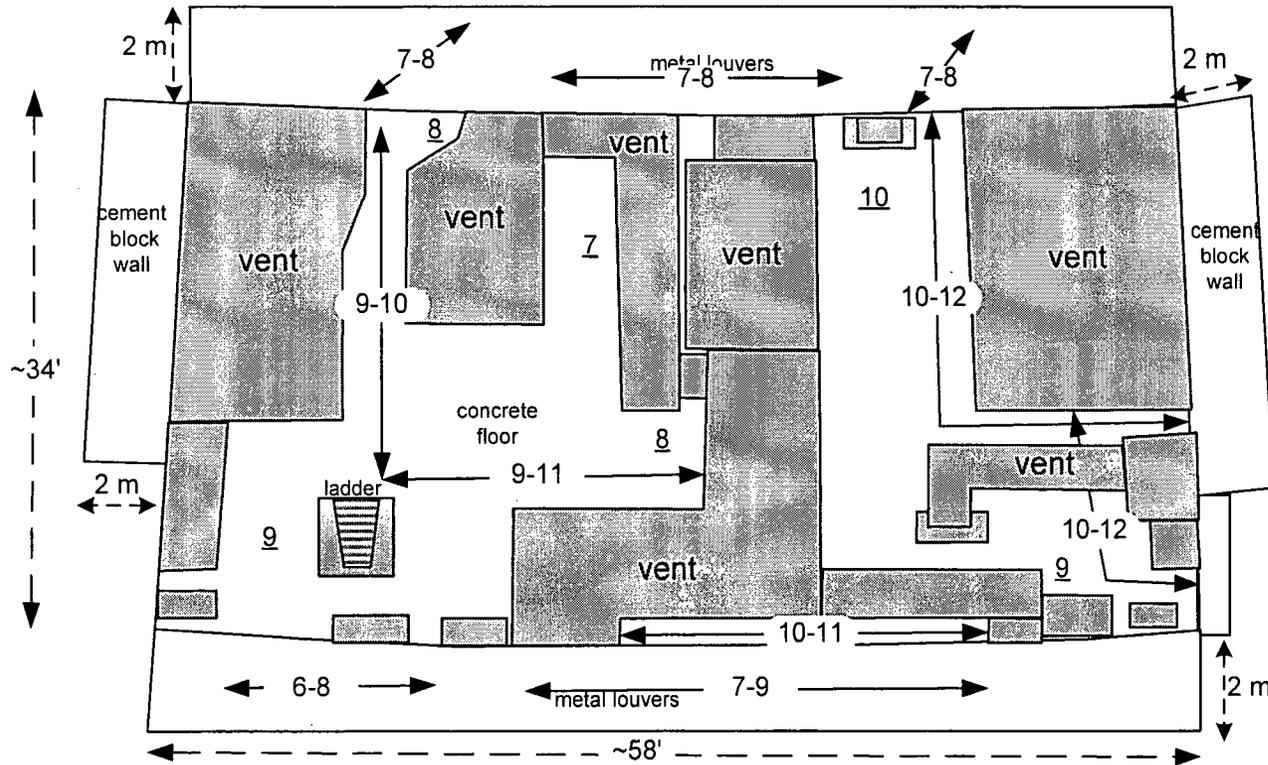
Notes:

1. 10% of floor and walls 2 meters and below were scanned for alpha and beta
2. ### α Denotes alpha scan in cpm.
3. ##### β Denotes beta scan in cpm.

Instruments		
Model	Ludlum 2221	Ludlum 2221
Serial Number	84459	154202
Probe	434 cm <sup>2</sup> α	434 cm <sup>2</sup> β
Probe Serial #	086215	149017
Cal Due Date	07-07-04	07-06-04
Efficiency %	21.58	30.39
Bkgd. Concrete	10-60 cpm	1300-2000 cpm
Bkgd. Cement block	10-30 cpm	1300-1500 cpm
Bkgd. Metal	0-40 cpm	700-1300 cpm

Surveys conducted by: R. Stowell & G. Sayer  
Date: 01-14-04

Figure 10: Building 2 Service Corridor Section C Vent Room Above Breezeway C  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



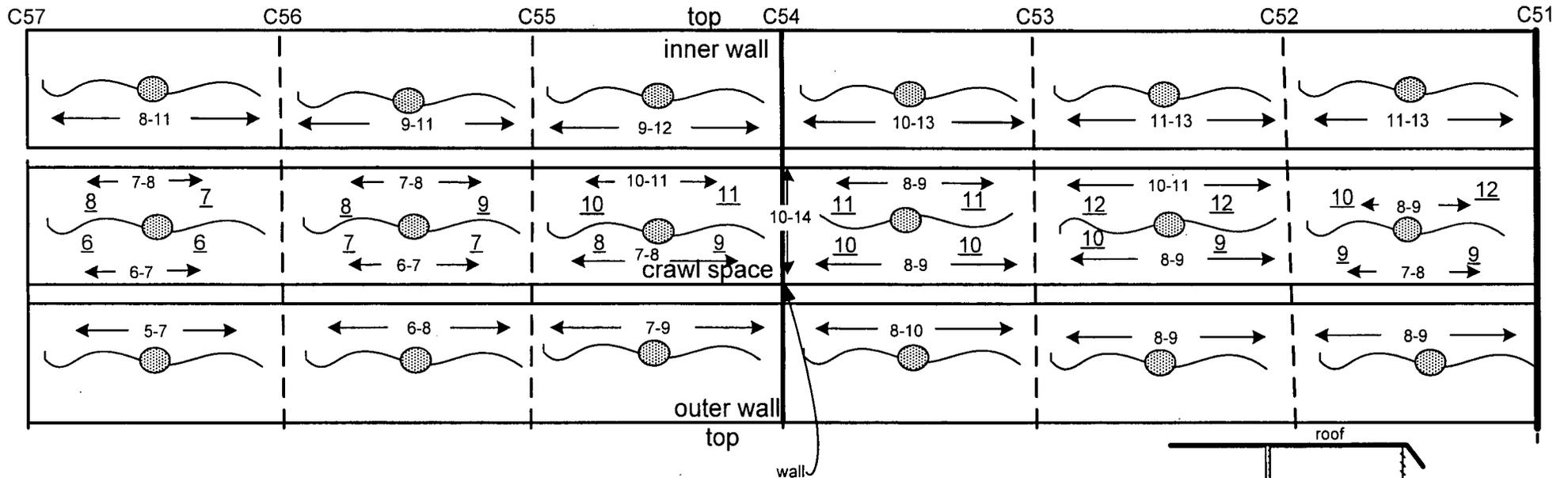
Notes:

1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken at  $\sim 1$  meter from the surface.
2.  $\leftarrow \text{##} \text{##} \rightarrow$  Denotes exposure rate surface scan in  $\mu\text{R/hr}$ .
3. 10% of floor and walls 2 meters and below were scanned.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Background	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Survey conducted by: G. Sayer & R. Stowell  
Date: 01-12-04

Figure 11: Building 2 Service Corridor Section C Overhead Crawl Space Column C51 to C57  
 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results



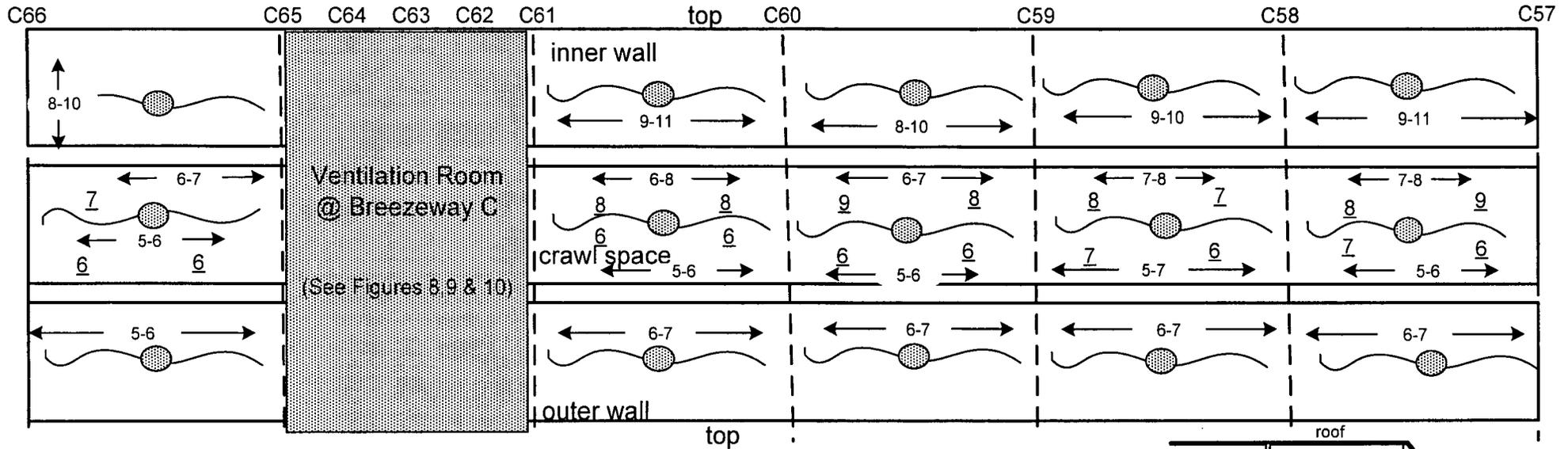
Notes:

1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken at ~ 1 meter from the surface
2.  $\leftarrow \text{###} \rightarrow$  Denotes exposure rate scan in  $\mu\text{R/hr}$ . 10% of surfaces scanned.
3.  Denotes large area wipe. Wipes collected on inner and outer walls and on vent ducts and piping in the crawl space.
4. All large area wipes  $\leq$  background for alpha and beta contamination..

Surveys conducted by: G. Sayer & R. Stowell  
 Dates: 01-09-04

Instruments		
Model	Ludlum 3	
Serial #	153590	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Bkgd. Metal	13-19 $\mu\text{R/hr}$ @ 1m	9-17 $\mu\text{R/hr}$ cont.
Bkgd. cem. block	13-20 $\mu\text{R/hr}$ @ 1m	13-20 $\mu\text{R/hr}$ cont.
Model	Ludlum 3	Ludlum 12
Serial Number	138880	138801
Probe	15 $\text{cm}^2$ $\beta$ - $\gamma$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	117851	145696
Cal Due Date	05-10-04	03-11-04
Efficiency	26.14%	22.52%
Background	20-60 cpm	<20 cpm

Figure 12: Building 2 Service Corridor Section C Overhead Crawl Space Column C57 to C66  
 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results



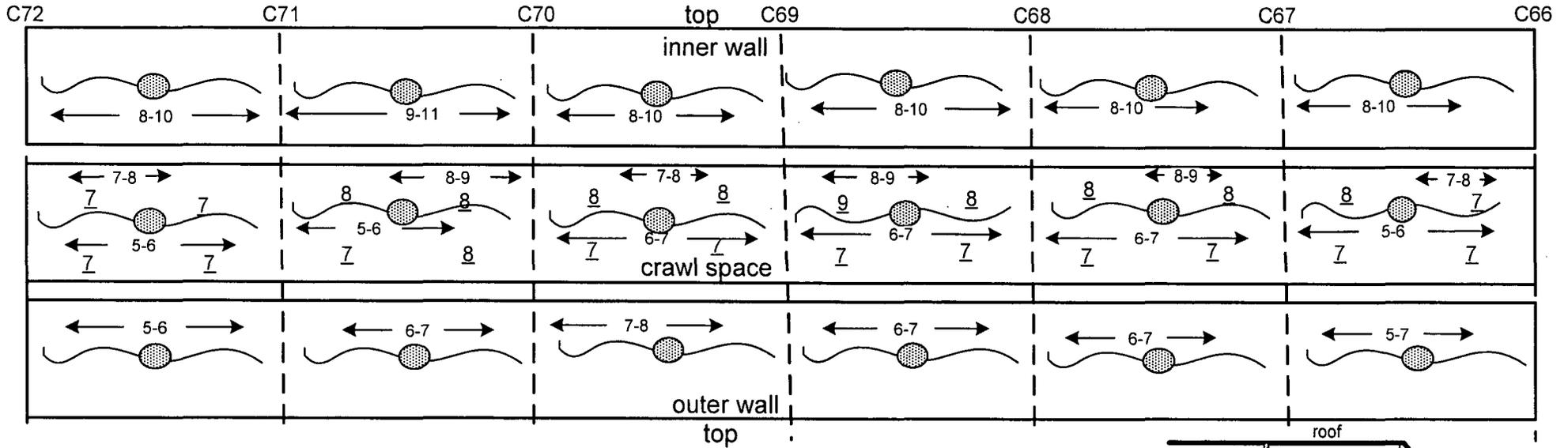
Notes:

1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken at ~ 1 meter from the surface
2.  $\leftarrow \### \rightarrow$  Denotes exposure rate scan in  $\mu\text{R/hr}$ . 10% of surfaces scanned.
3. Denotes large area wipe. Wipes collected on inner and outer walls and on vent ducts and piping in the crawl space.
4. All large area wipes  $\leq$  background for alpha and beta contamination.

Surveys conducted by: G. Sayer & R. Stowell  
 Dates: 01-09-04

Instruments		
Model	Ludlum 3	
Serial #	153590	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Bkgd. Metal	13-19 $\mu\text{R/hr}$ @ 1m	9-17 $\mu\text{R/hr}$ cont.
Bkgd. cem. block	13-20 $\mu\text{R/hr}$ @ 1m	13-20 $\mu\text{R/hr}$ cont.
Model	Ludlum 3	Ludlum 12
Serial Number	138880	138801
Probe	15 $\text{cm}^2$ $\beta$ - $\gamma$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	117851	145696
Cal Due Date	05-10-04	03-11-04
Efficiency	26.14%	22.52%
Background	20-60 cpm	<20 cpm

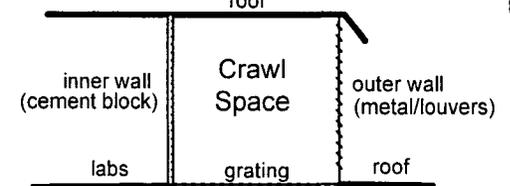
Figure 13: Building 2 Service Corridor Section C Overhead Crawl Space Column C66 to C72  
 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results



Notes:

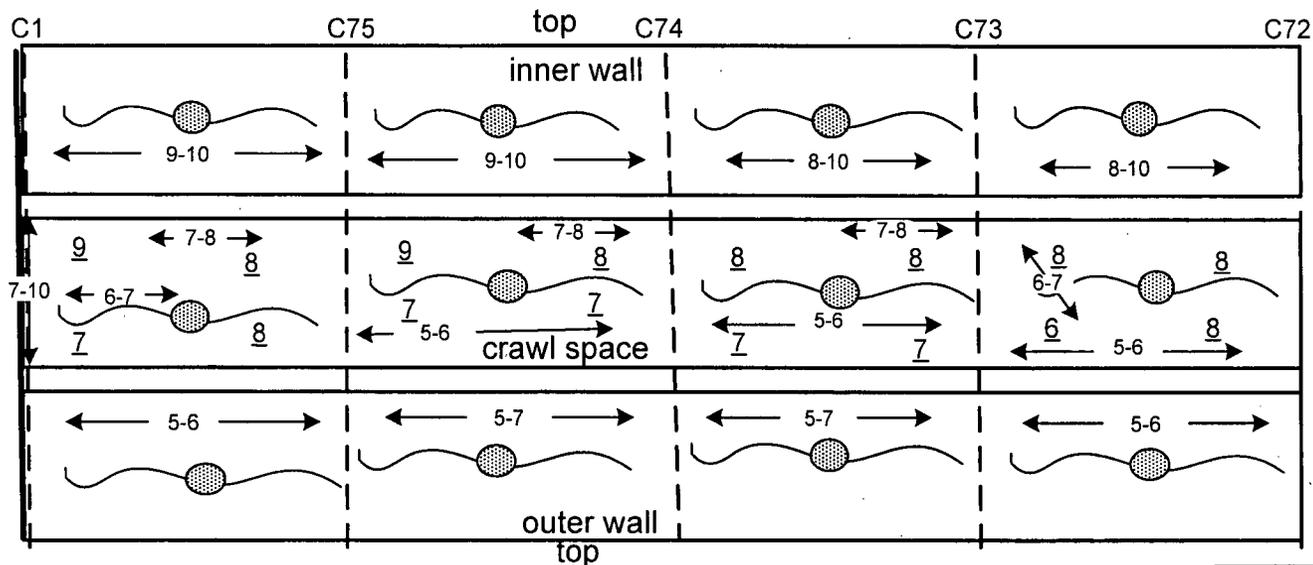
1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken at ~ 1 meter from the surface
2.  $\leftarrow \#\#\rightarrow$  Denotes exposure rate scan in  $\mu\text{R/hr}$ . 10% of surfaces scanned.
3. Denotes large area wipe. Wipes collected on inner and outer walls and on vent ducts and piping in the crawl space.
4. All large area wipes  $\leq$  background for alpha and beta contamination.

Surveys conducted by: G. Sayer & R. Stowell  
 Dates: 01-09-04



Instruments		
Model	Ludlum 3	
Serial #	153590	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Bkgd. Metal	13-19 $\mu\text{R/hr}$ @ 1m	9-17 $\mu\text{R/hr}$ cont.
Bkgd. cem. block	13-20 $\mu\text{R/hr}$ @ 1m	13-20 $\mu\text{R/hr}$ cont.
Model	Ludlum 3	Ludlum 12
Serial Number	138880	138801
Probe	15 $\text{cm}^2$ $\beta$ - $\gamma$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	117851	145696
Cal Due Date	05-10-04	03-11-04
Efficiency	26.14%	22.52%
Background	20-60 cpm	<20 cpm

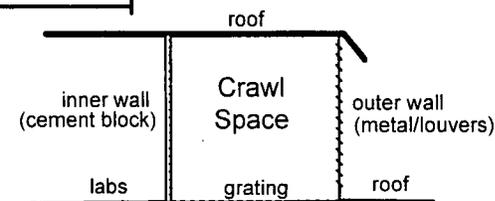
Figure 14: Building 2 Service Corridor Section C Overhead Crawl Space Column C72 to C1  
 Fixed Exposure Rate and Exposure Rate Scan Measurement and Large Area Wipe Locations and Results



Notes:

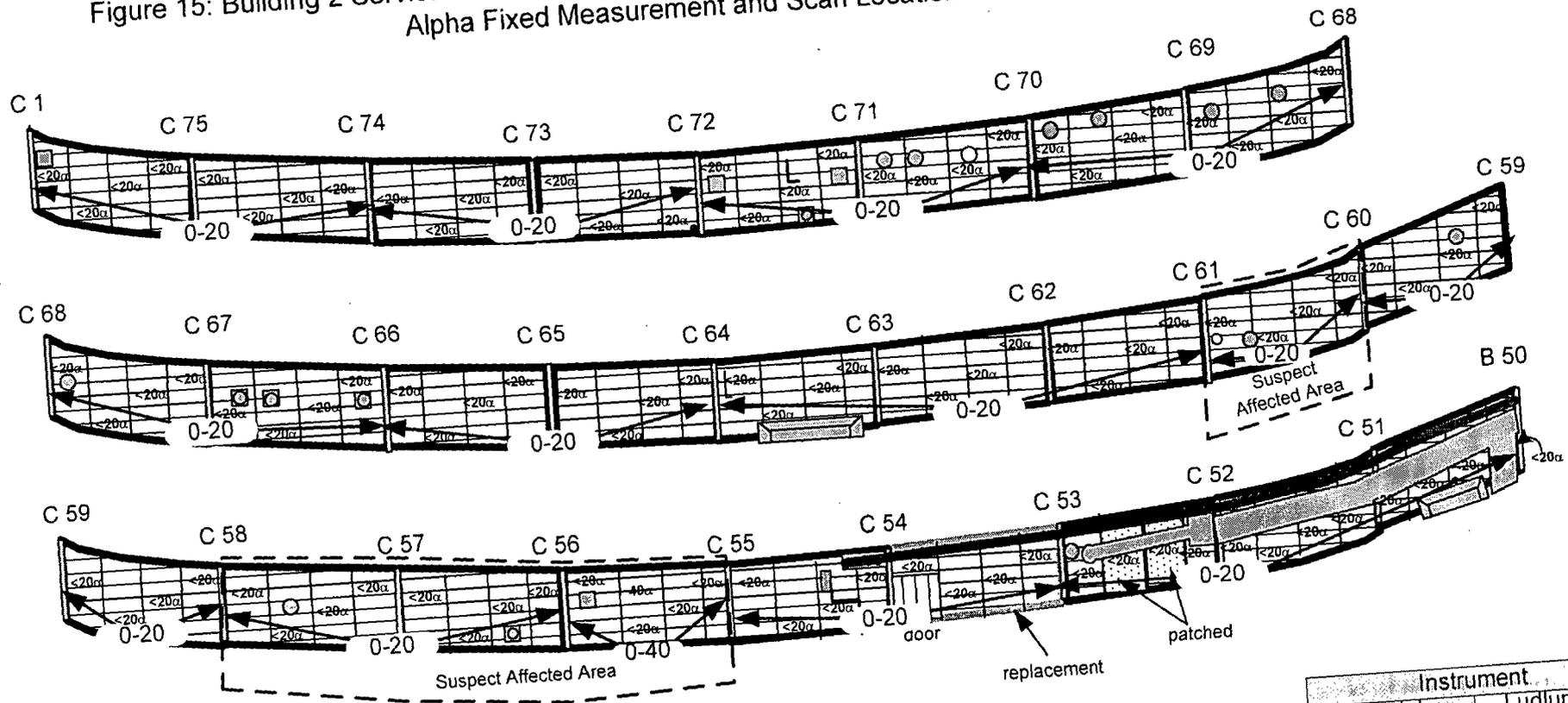
1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken at ~ 1 meter from the surface
2. **← ### →** Denotes exposure rate scan in  $\mu\text{R/hr}$ . 10% of surfaces scanned.
3.  Denotes large area wipe. Wipes collected on inner and outer walls and on vent ducts and piping in the crawl space.
4. All large area wipes  $\leq$  background for alpha and beta contamination.

Surveys conducted by: G. Sayer, R. Stowell  
 Date: 01-09-04



Instruments		
Model	Ludlum 3	
Serial #	153590	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Bkgd. Metal	13-19 $\mu\text{R/hr}$ @ 1m	9-17 $\mu\text{R/hr}$ cont.
Bkgd. cem. block	13-20 $\mu\text{R/hr}$ @ 1m	13-20 $\mu\text{R/hr}$ cont.
Model	Ludlum 3	Ludlum 12
Serial Number	138880	138801
Probe	15 $\text{cm}^2$ $\beta$ - $\gamma$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	117851	145696
Cal Due Date	05-10-04	03-11-04
Efficiency	26.14%	22.52%
Background	20-60 cpm	<20 cpm

Figure 15: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface  
Alpha Fixed Measurement and Scan Locations and Results



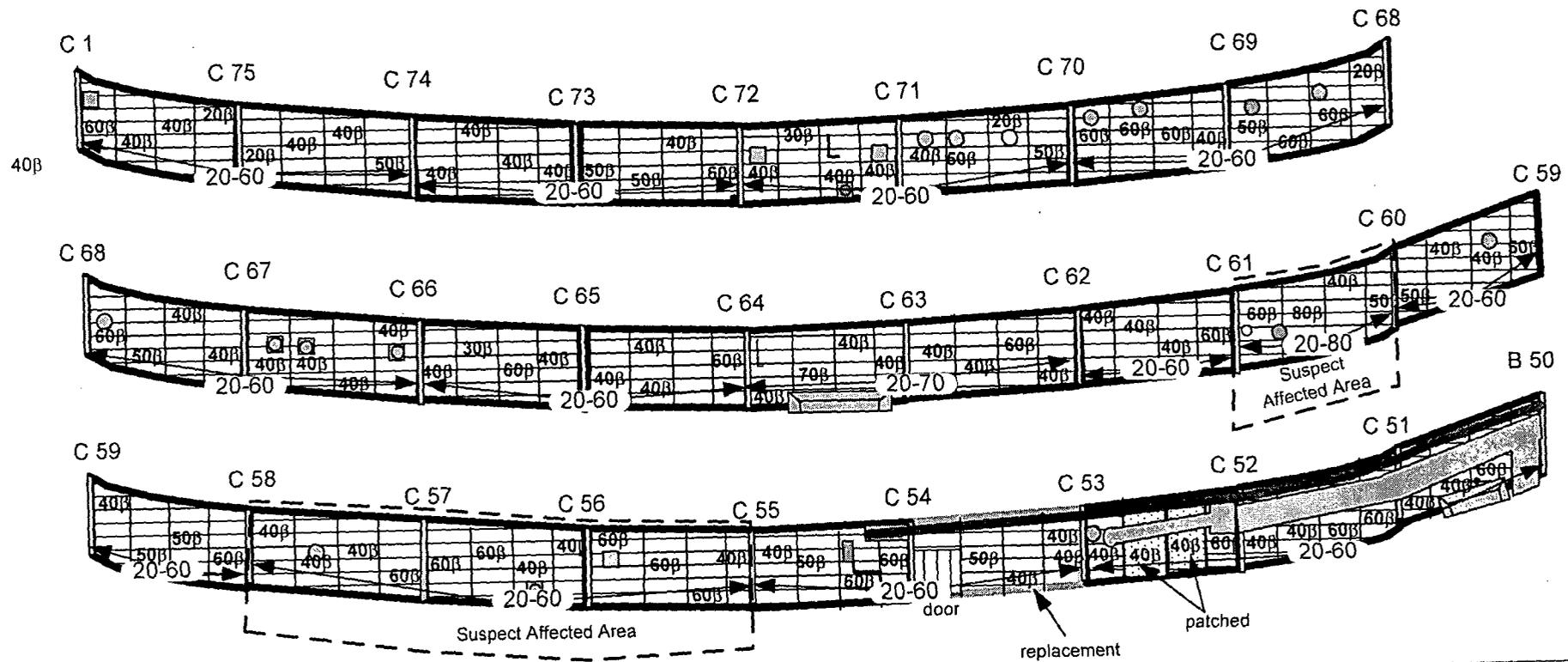
Notes:

1. 100% of accessible surface scanned in suspect affected area, 10% of the remaining louvered surface scanned.
2.  $\leftarrow \#\# \rightarrow$  Denotes alpha scan in cpm.
3.  $\#\# \alpha$  Denotes fixed alpha measurement in cpm. Maximum alpha measurement was 40 cpm, < MDA.

Instrument	
Model	Ludlum 12
Serial Number	138738
Probe	50 cm <sup>2</sup> α
Probe Serial #	073380
Cal Due Date	04-30-04
Efficiency	21.02%
Bkgd. Metal	<20 cpm
MDA	222 dpm/100cm <sup>2</sup>

Survey conducted by: R. Stowell  
Date: 11-10-03

Figure 16: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface  
Beta Fixed Measurement and Scan Locations and Results



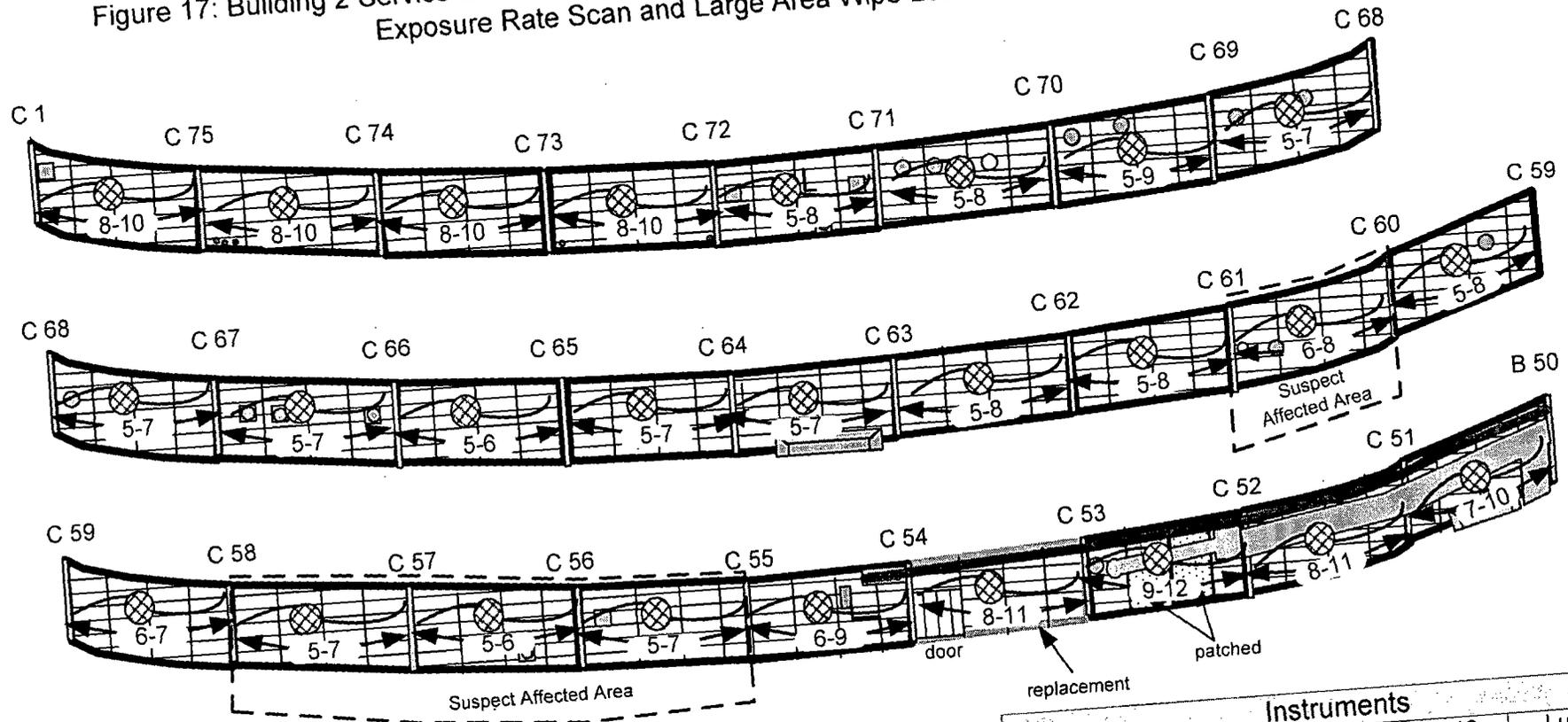
Notes:

1. 100% of accessible surface scanned in Suspect Affected Areas, 10% of the remaining louvered surface scanned.
2.  $\leftarrow \#\#\beta \rightarrow$  Denotes beta scan in cpm.
3.  $\#\#\beta$  Denotes fixed beta measurement in cpm. Maximum beta measurement was 80 cpm.

Instrument	
Model	Ludlum 3
Serial Number	138880
Probe	15 cm <sup>2</sup> β
Probe Serial #	117851
Cal Due Date	05-10-04
Efficiency	26.14%
Bkgd. Metal	40-70 cpm

Survey conducted by: G. Sayer  
Dates: 11-10-03 to 11-18-03

Figure 17: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface Exposure Rate Scan and Large Area Wipe Locations and Results

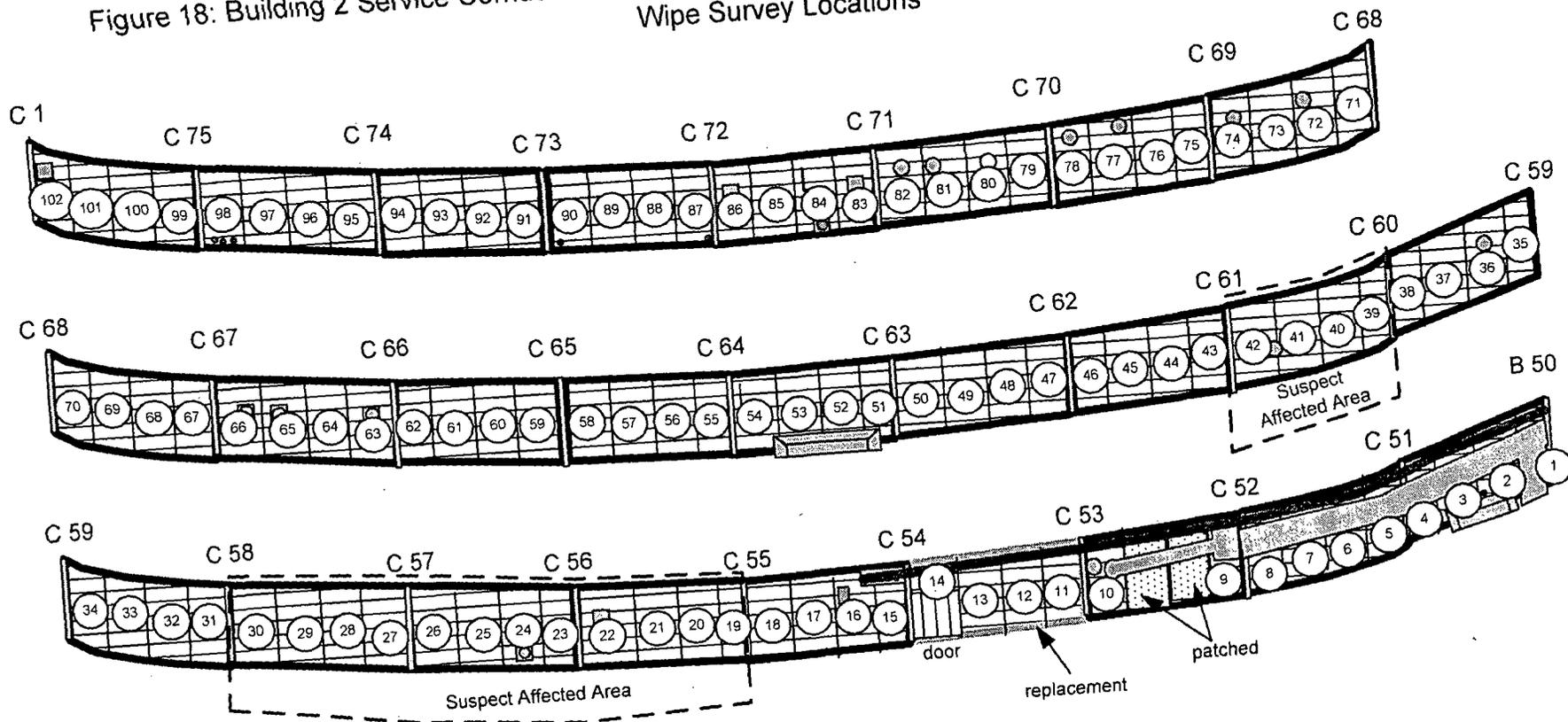


- Notes:
- Denotes exposure rate scan in  $\mu\text{R/hr}$ . 100% of the accessible louvered surface was scanned.
  - Denotes large area wipe. One large area wipe of the accessible surface per segment was taken as shown. All wipes were counted for alpha and beta contamination. All were  $\leq$  background for alpha or beta contamination.

Instruments			
Model	Ludlum 3	Ludlum 12	Ludlum 3
Serial Number	153551	138801	138880
Probe	2" X 2" NaI $\gamma$	50 cm <sup>2</sup> $\alpha$	15 cm <sup>2</sup> $\beta$
Probe Serial #	155109	145696	117851
Cal Due Date	11-17-03	03-11-04	03-11-04
Efficiency	NA	22.52%	26.14%
Background	9-13 $\mu\text{R/hr}$	<20 cpm	20-60 cpm

Surveys conducted by: D. Kohlker & G Sayer  
Date: 10-30-03

Figure 18: Building 2 Service Corridor Section C Overhead Crawl Space Outer Louvered Wall External Surface Wipe Survey Locations

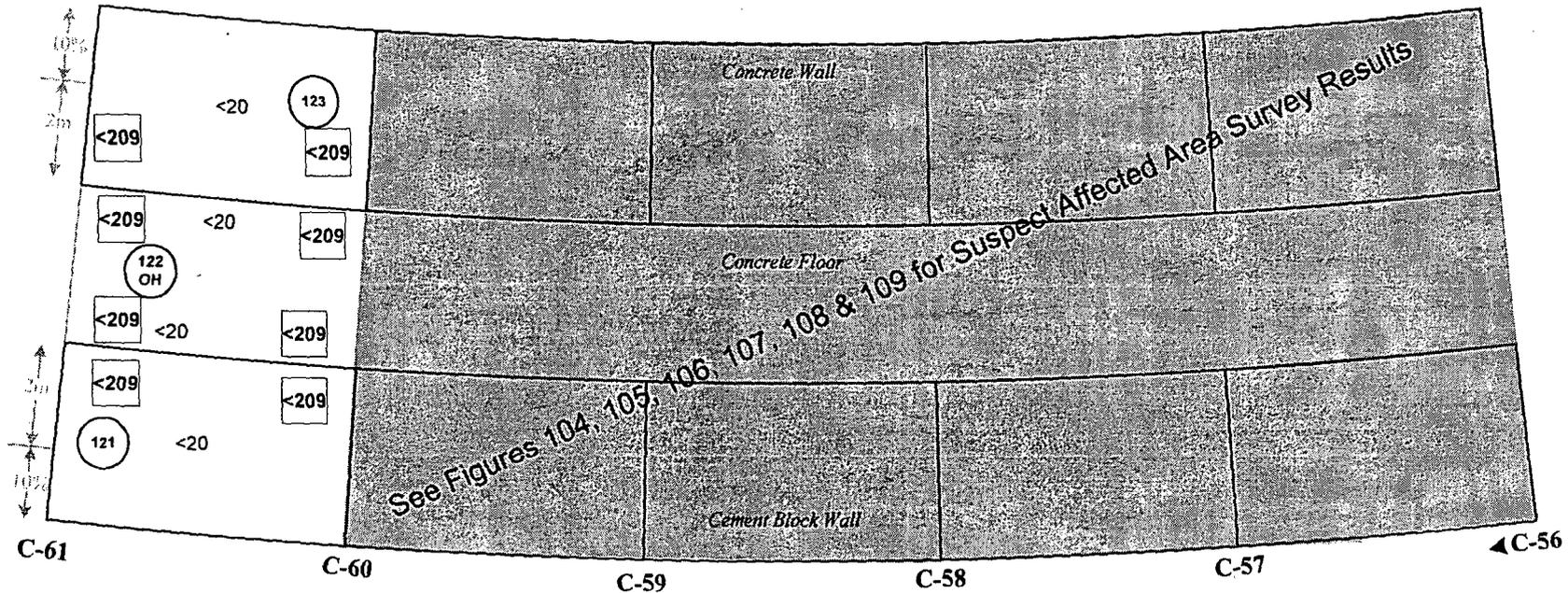


Notes:

1. # Denotes wipe location. Wipes were taken on the under side of the louvers.
2. Wipe results are provided in Table 5.

Survey conducted by: G. Sayer  
 Date: 11-03-03 & 11-04-03

**Figure 19: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-56 to C-61 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations**



Location	Building 2 Service Corridor	
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating
Surveyors: S. Finchum, $\beta$	Date: 4/12-17/02	
Surveyors: S. Finchum, B. Hunter, $\alpha$	Date: 5/7-9/02	

**LEGEND**

# - # = Alpha in CPM

# = Beta in dpm/100 cm<sup>2</sup>

# = wipe location  
OH = Overhead

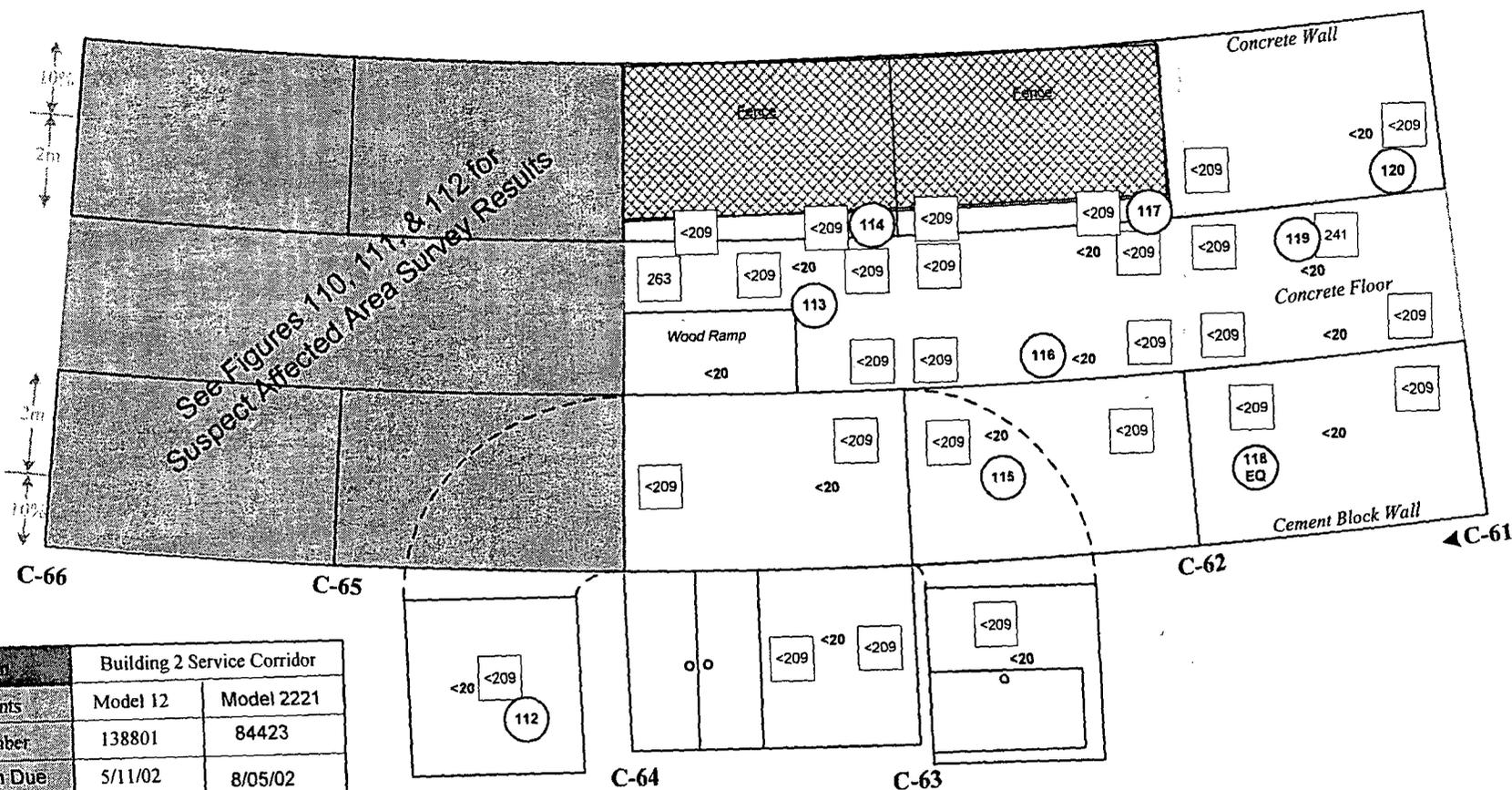
C# = Column Number

All Beta Results are < MDA

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

**Figure 20: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-61 to C-66 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations**



Location	Building 2 Service Corridor	
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	100 $\text{cm}^2$
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 $\text{cm}^2$	33	209, Concrete 177, grating
Surveyors: B. Hunter, $\beta$	Date: 02/11-12/02	
Surveyor: B. Hunter, $\alpha$	Date: 04/25/-05/02/02	

**LEGEND**

# - # = Alpha in CPM

# = Beta in dpm/100  $\text{cm}^2$

# = wipe location

EQ = Equipment

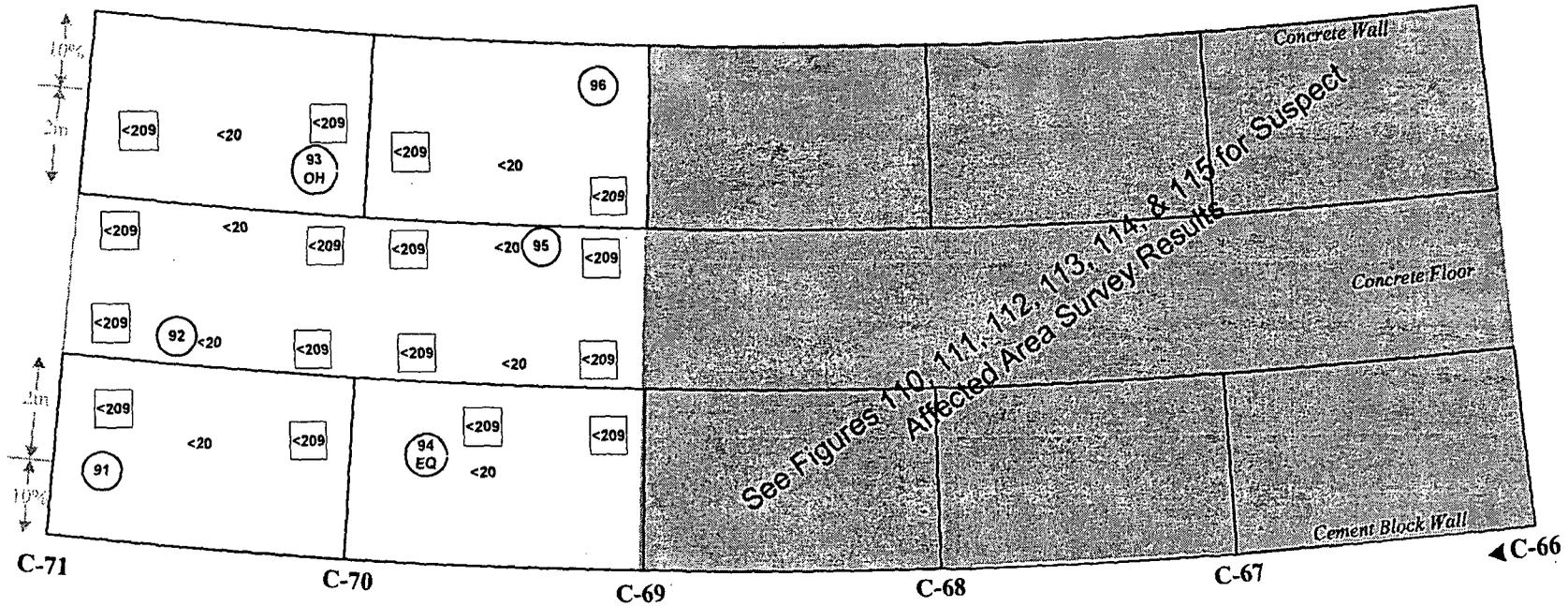
C# = Column Number

The highest Beta result is 263 dpm/ 100  $\text{cm}^2$

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

**Figure 21: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-66 to C-71  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations**



Location	Building 2 Service Corridor	
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating
Surveyors: B. Hunter, $\beta$ Date: 02/11-12/02		
Surveyor: B. Hunter, $\alpha$ Date: 04/25/-05/02/02		

**LEGEND**

# - # = Alpha in CPM

# = Beta in dpm/100 cm<sup>2</sup>

# = Wipe location  
EQ = Equipment  
OH = Overhead

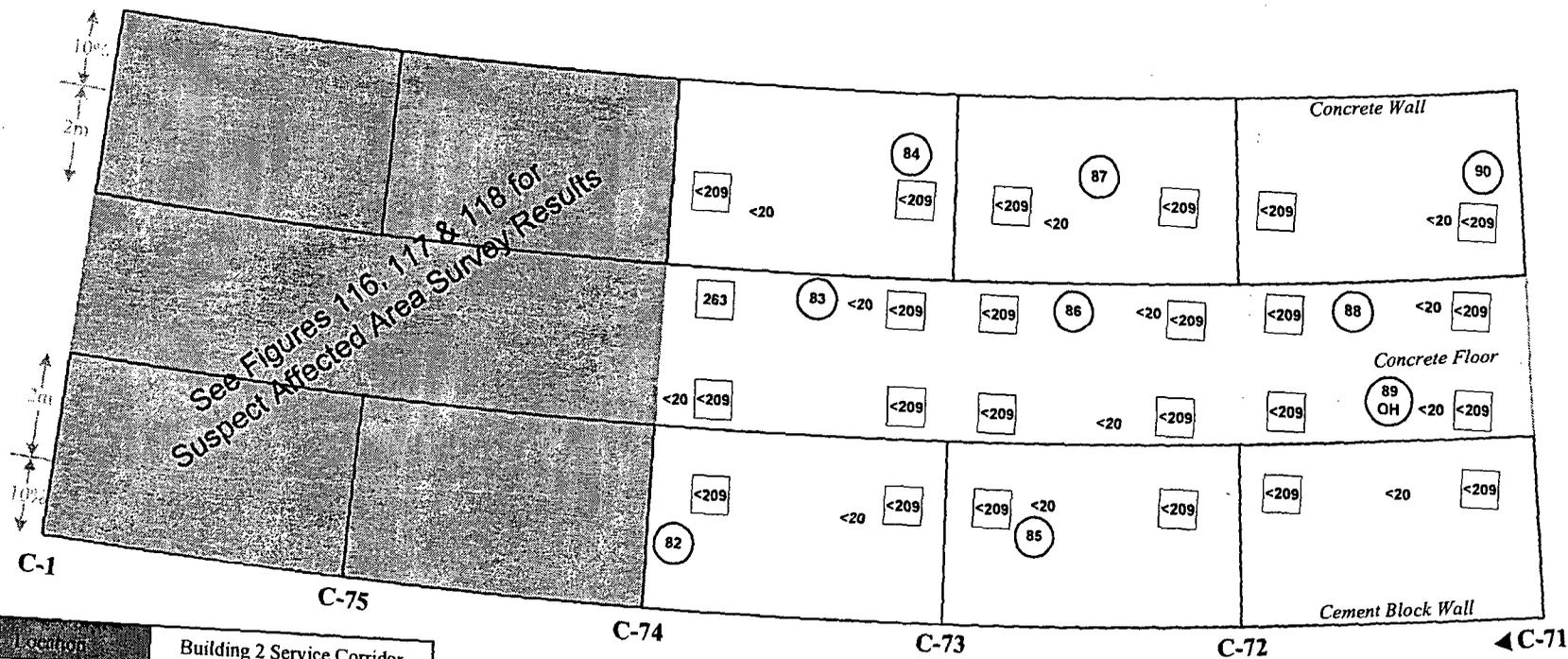
C# = Column Number

All Beta Results are < MDA

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

Figure 22: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-71 to C-1 Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



Location	Building 2 Service Corridor	
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating
Surveyors: B. Hunter $\beta$	Date: 02/11-12/02	
Surveyor: B. Hunter $\alpha$	Date: 04/25/-05/02/02	

**LEGEND**

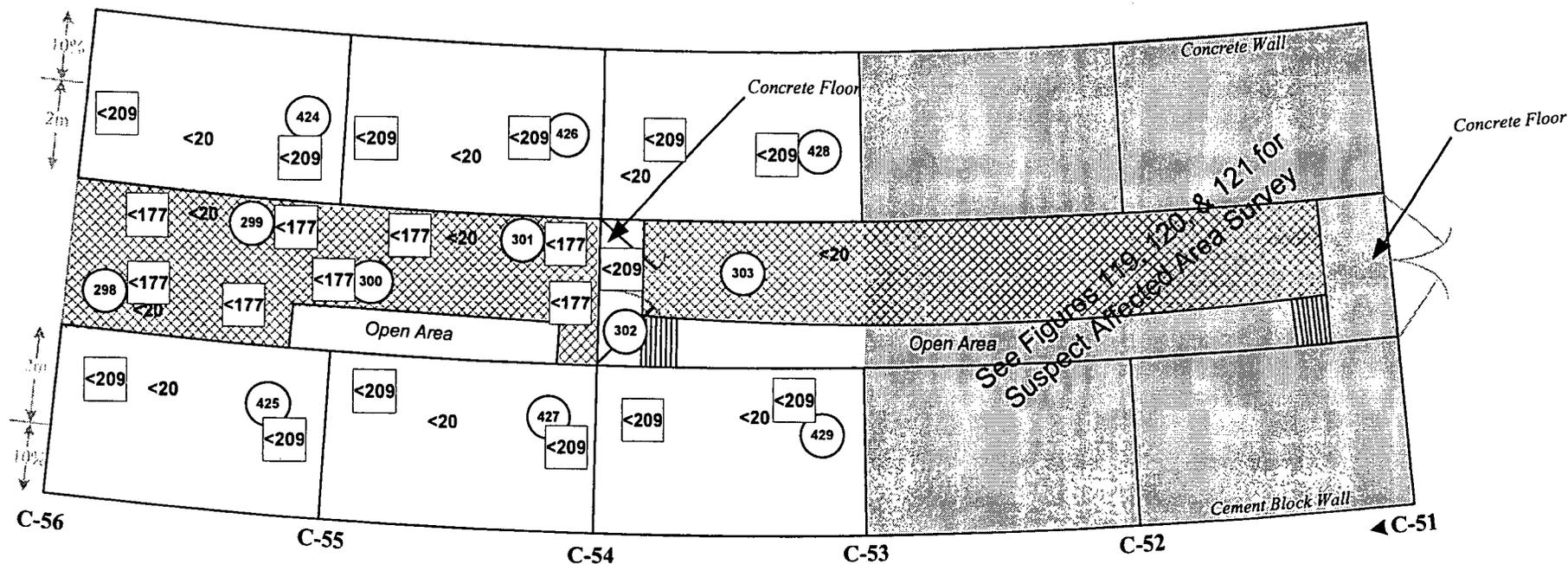
- # - # = Alpha in CPM
- # = Beta in dpm/100 cm<sup>2</sup>
- # = wipe location
- OH = Overhead
- C# = Column Number

The highest Beta result = 263 dpm/100 cm<sup>2</sup>

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

**Figure 23: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-51 to C-56 Fixed Alpha and Beta Measurement Locations and Results, and Wipe Survey Locations**



Location		
Building 2 Service Corridor		
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating
Surveyors: S. Finchum, $\beta$ Date: 04/12-17/02		
Surveyor: B. Hunter $\alpha$ Date: 05/07-09/02		

**LEGEND**

# - # = Alpha in CPM

# = Beta in dpm/100 cm<sup>2</sup>

# = wipe location

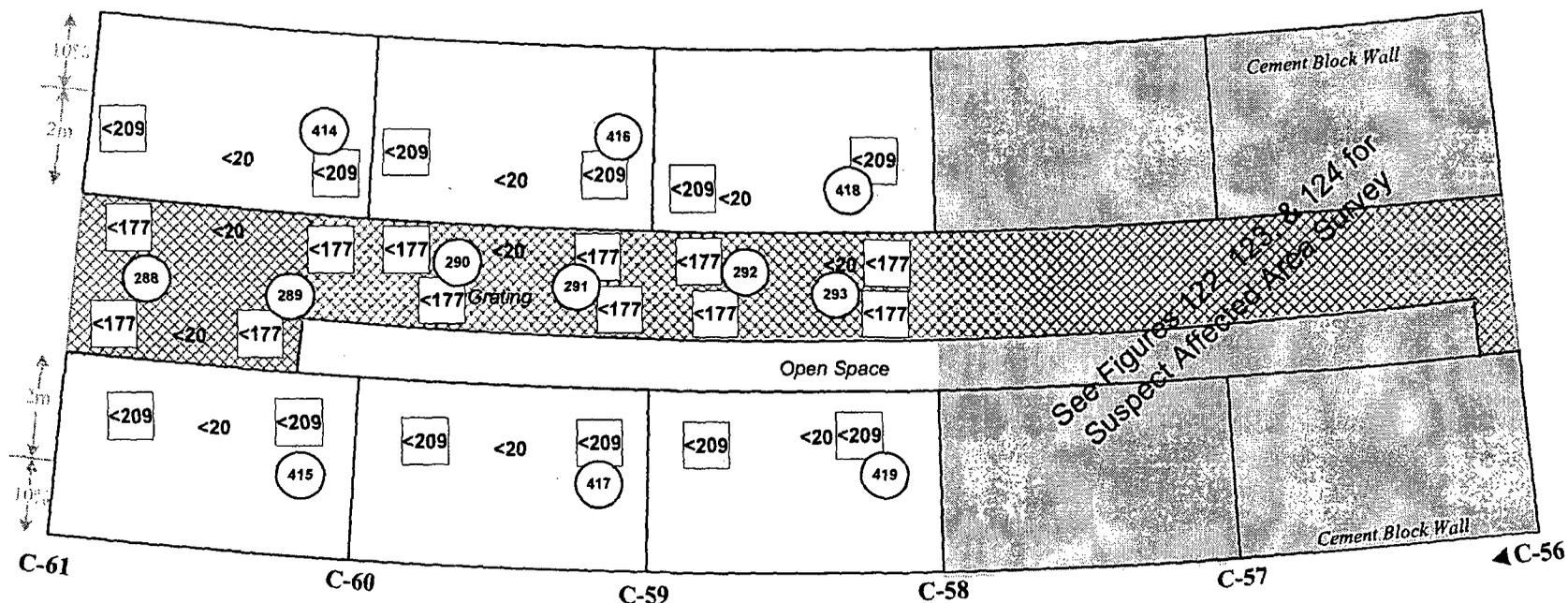
C# = Column Number

All  $\beta$  Results are < MDA.

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

**Figure 24: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-56 to C-61 Fixed Alpha and Beta Measurement Locations and Results, and Wipe Survey Locations**



Locator		Building 2 Service Corridor	
Instruments	Model 12	Model 2221	
Serial Number	138801	84423	
Calibration Due	5/11/02	8/05/02	
Efficiency	22.52%	36.47%	
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	
Probe Number	145696	119444	
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>	
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating	
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating	
Surveyors: S. Finchum, $\beta$ Date: 04/12-17/02			
Surveyor: B. Hunter, $\alpha$ Date: 04/25/05/02/02			

**LEGEND**

# - # = Alpha in CPM

# = Beta in dpm/100 cm<sup>2</sup>

# = wipe location

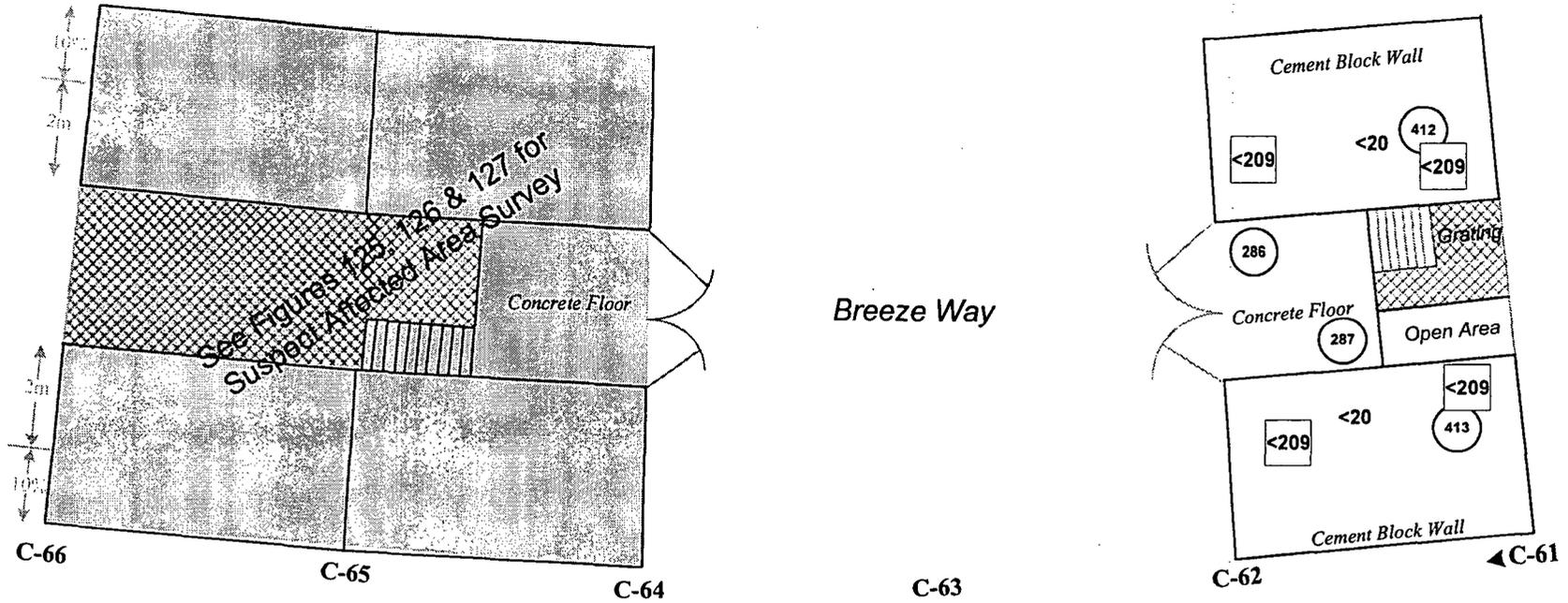
C# = Column Number

All  $\beta$  Results are < MDA.

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

**Figure 25: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-61 to C-66 Fixed Alpha and Beta Measurement Locations and Results, and Wipe Survey Locations**



Location	Building 2 Service Corridor	
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating
Surveyors: S. Finchum, $\beta$ Date: 04/12-17/02		
Surveyor: B. Hunter $\alpha$ Date: 05/07-09/02		

**LEGEND**

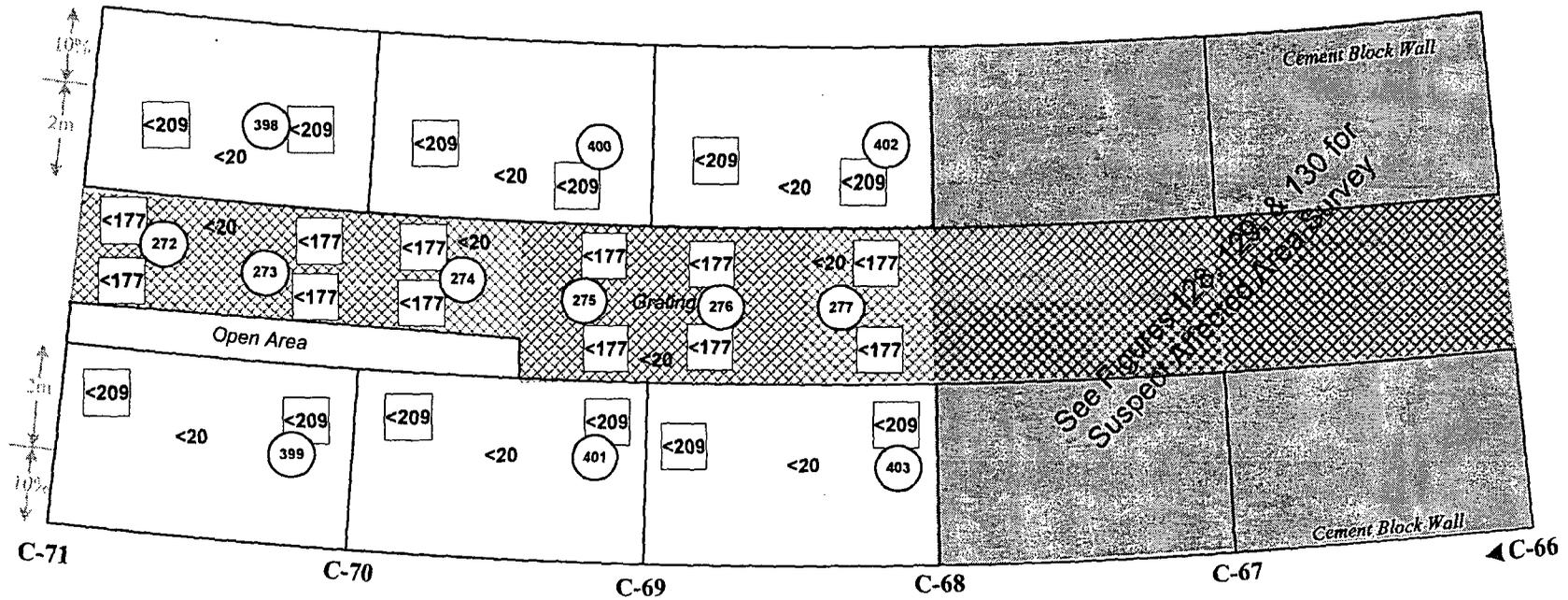
- # - # = Alpha in CPM
- # = Beta in dpm/100 cm<sup>2</sup>
- # = wipe location
- C# = Column Number

All  $\beta$  Results are < MDA.

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.

**Figure 26: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-66 to C-71 Fixed Alpha and Beta Measurement Locations and Results, and Wipe Survey Locations**



Location	Building 2 Service Corridor	
Instruments	Model 12	Model 2221
Serial Number	138801	84423
Calibration Due	5/11/02	8/05/02
Efficiency	22.52%	36.47%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	145696	119444
Probe Size cm <sup>2</sup>	50cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	1042 cp2m, Concrete 738 cp2m, Grating
MDA in DPM/100 cm <sup>2</sup>	33	209, Concrete 177, grating
Surveyors: S. Finchum $\beta$ Date: 04/12-17/02		
Surveyor: B. Hunter $\alpha$ Date: 05/07-09/02		

**LEGEND**

# - # = Alpha in CPM

# = Beta in dpm/100 cm<sup>2</sup>

# = wipe location

C# = Column Number

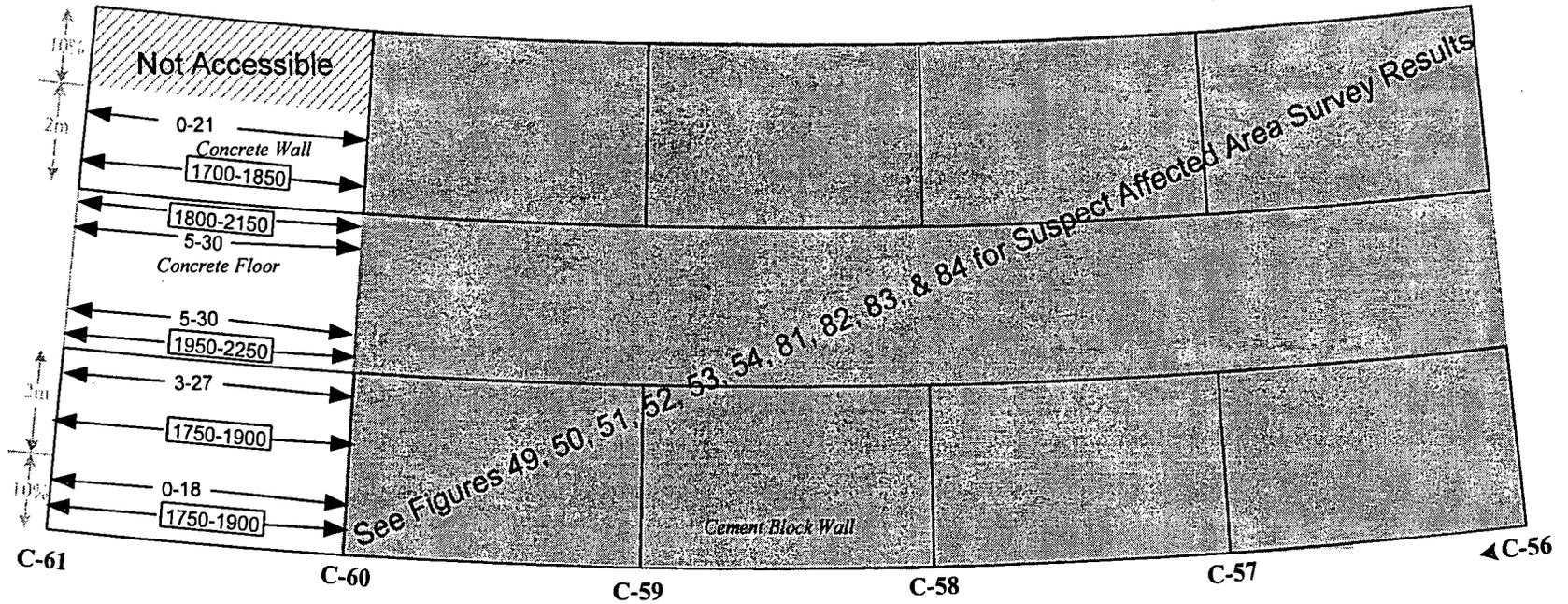
All  $\beta$  Results are < MDA.

All  $\alpha$  Results = Natural Background.

See Table 4 for Wipe analysis Results.



**Figure 28: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-56 to C-61 Alpha and Beta Surface Scan Measurement Locations and Results**



Location	Building 2 Service Corridor	
Instruments	Model 2221	Model 2221
Serial Number	148425	84459
Calibration Due	06/02/02	07/24/02
Efficiency	21.29%	31.08%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	086236	086215
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C. Block
Scan MDA In: DPM/ 100 cm <sup>2</sup>	X= 4.0 108	X= 0.3 643, Concrete 388, C. Block
Surveyors: J. Sullivan, B. Hunter		
Date: 2/05/02 ( $\alpha$ )		Date: 2/15/02 ( $\beta$ )

**LEGEND**

← ### → = Alpha Scan Results in cpm

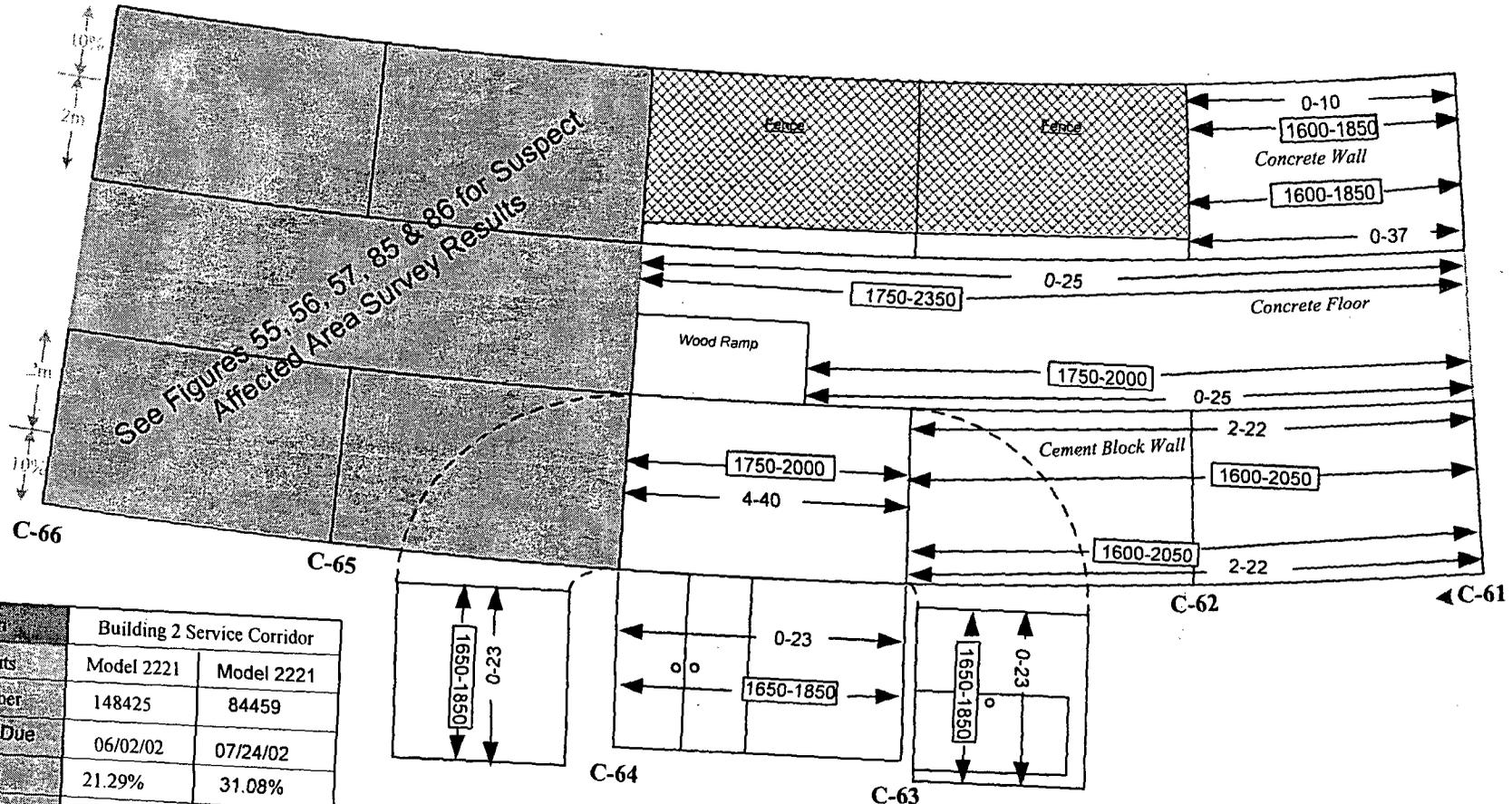
← ### → = Beta Scan Results in cpm

C# = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

**Figure 29: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-61 to C-66  
Alpha and Beta Scan Measurement Locations and Results.**



Location	Building 2 Service Corridor	
Instruments	Model 2221	Model 2221
Serial Number	148425	84459
Calibration Due	06/02/02	07/24/02
Efficiency	21.29%	31.08%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	086236	086215
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C. Block
Scan MDA in DPM/100 cm <sup>2</sup>	X= 4.0 108	X= 0.3 643, Concrete 388, C. Block
Surveyors: J. Sullivan, B. Hunter		
Date: 2/05/02 ( $\alpha$ )	Date: 2/15/02 ( $\beta$ )	

**LEGEND**

← ### → = Alpha Scan Results in cpm

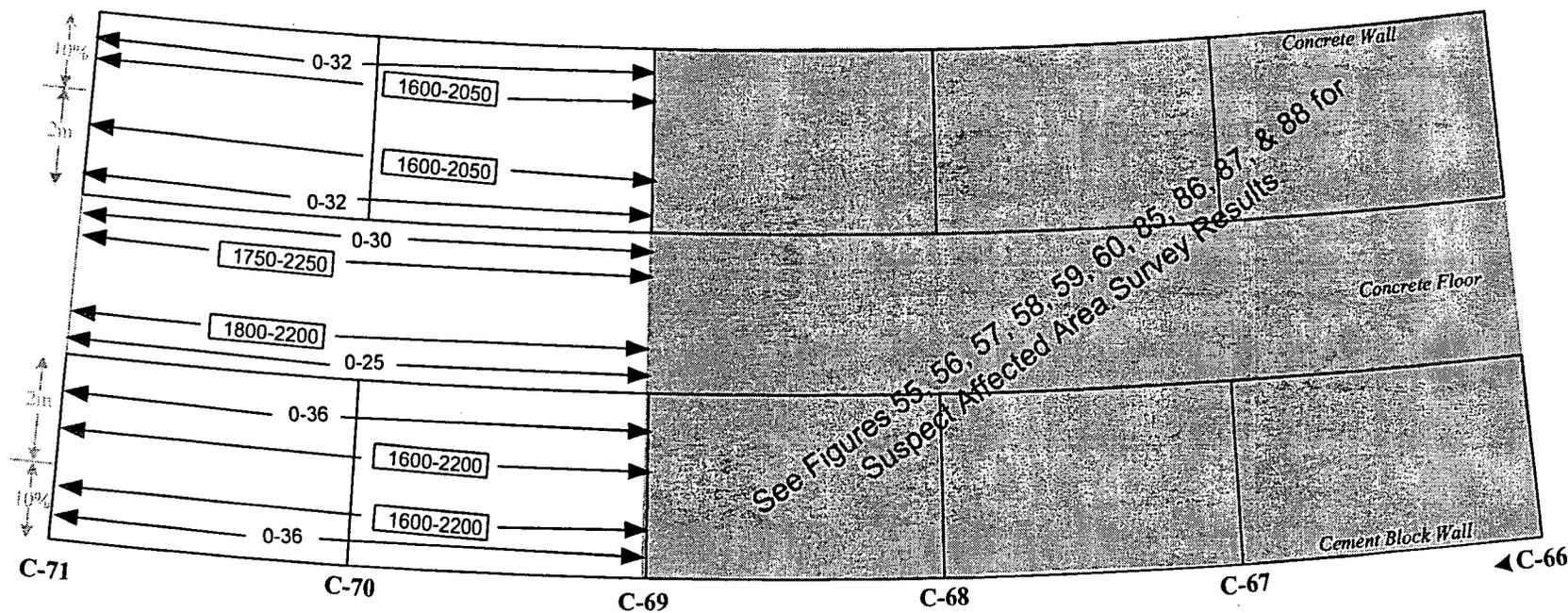
← [###] → = Beta Scan Results in cpm

C# = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

**Figure 30: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-66 to C-71 Alpha and Beta Scan Measurement Locations and Results.**



Location	Building 2 Service Corridor	
Instruments	Model 2221	Model 2221
Serial Number	148425	84459
Calibration Due	06/02/02	07/24/02
Efficiency	21.29%	31.08%
$\alpha$ , $\beta$ , $\gamma$	$\alpha$	$\beta$
Probe Number	086236	086215
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C.Block
Scan MDA in DPM/ 100 cm <sup>2</sup>	X= 4.0 108	X= 0.3 643, Concrete 388, C. Block
Surveyors: J. Sullivan, B. Hunter		
Date: 2/05/02 ( $\alpha$ )		Date: 2/15/02 ( $\beta$ )

**LEGEND**

← ## ## → = Alpha Scan Results in cpm

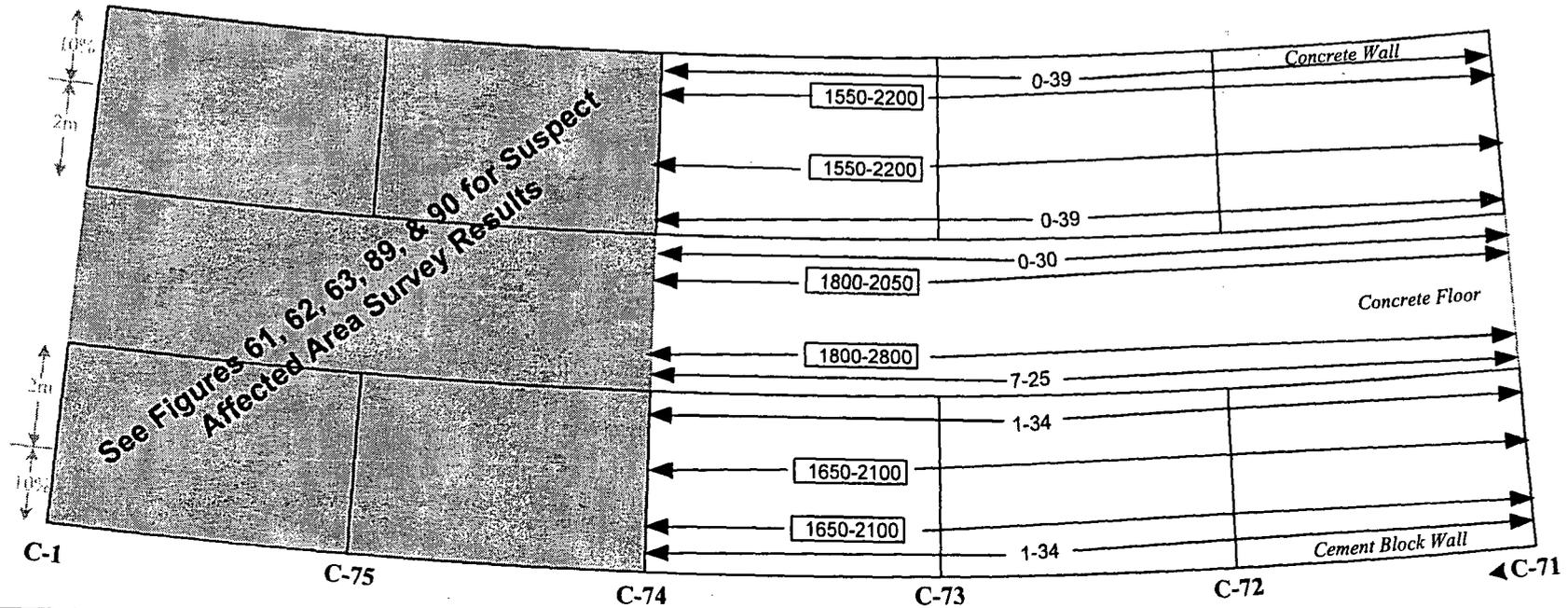
← [## ##] → = Beta Scan Results in cpm

**C#** = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

Figure 31: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-71 to C-1 Alpha and Beta Scan Measurement Locations and Results.



Location	Building 2 Service Corridor	
Instruments	Model 2221	Model 2221
Serial Number	148425	84459
Calibration Due	06/02/02	07/24/02
Efficiency	21.29%	31.08%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	086236	086215
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C. Block
Scan MDA in DPM/ 100 cm <sup>2</sup>	X= 4.0 108	X= 0.3 643, Concrete 388, C. Block
Surveyors: J. Sullivan, B. Hunter		
Date: 2/05/02 ( $\alpha$ )      Date: 2/15/02 ( $\beta$ )		

**LEGEND**

← ## ## → = Alpha Scan Results in cpm

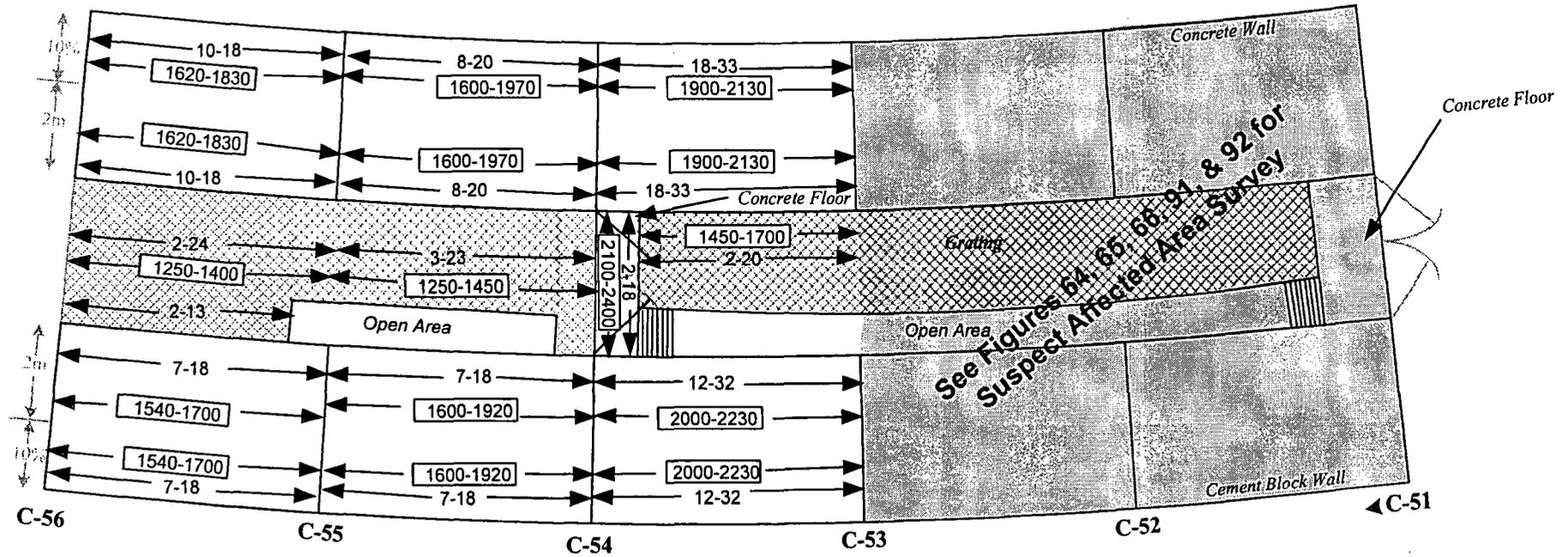
← ## ## → = Beta Scan Results in cpm

C# = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

**Figure 32: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-51 to C-56 Alpha and Beta Scan Measurement Locations and Results.**



Location		
Building 2 Service Corridor		
Instruments	Model 2221	Model 2221
Serial Number	148425	84459
Calibration Due	07/31/02	11/12/02
Efficiency	21.09%	31.08%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$
Probe Number	086236	086215
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C.Block
Scan MDA in DPM/100 cm <sup>2</sup>	X= 4.0 109	X= 0.3 643, Concrete 388, C. Block
Surveyors: S. Finchum, B. Hunter		
Date: 5/01-07/02 ( $\alpha$ ) . Date: 5/07-15/02 ( $\beta$ )		

**LEGEND**

← ### → = Alpha Scan Results in cpm

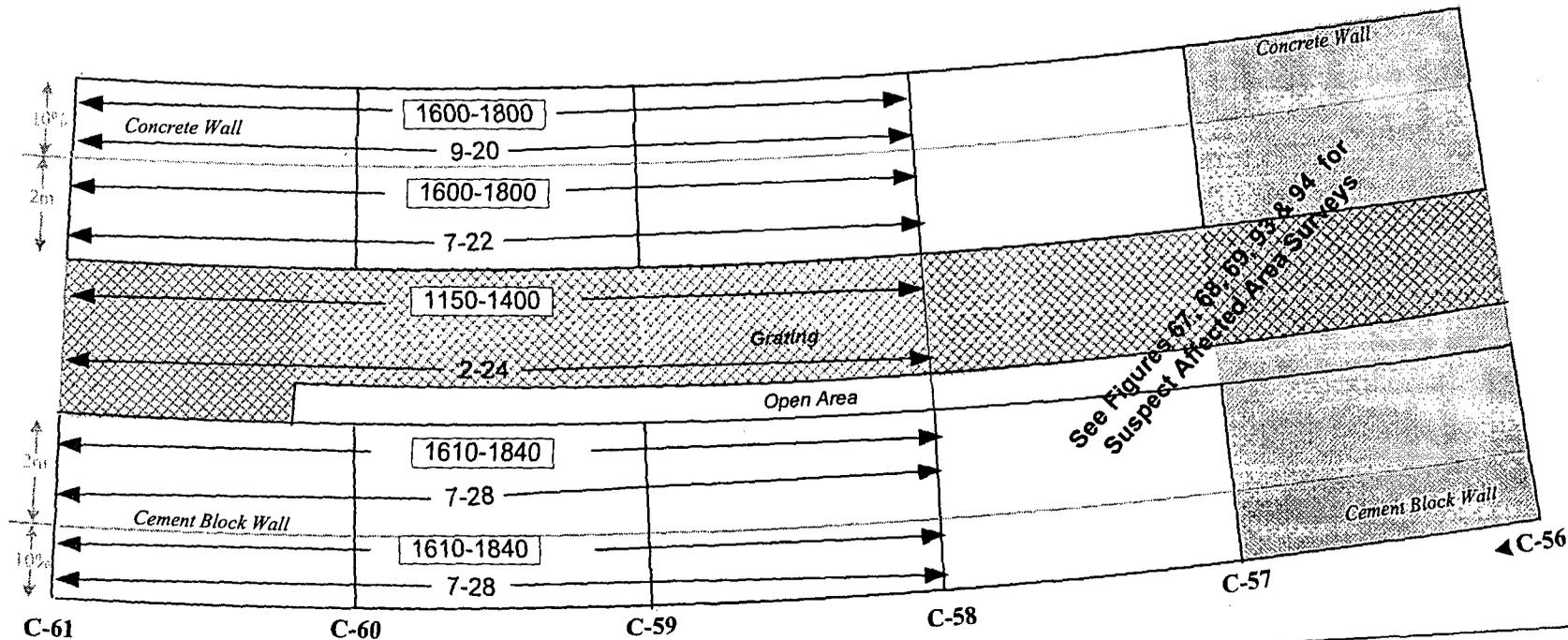
← [###] → = Beta Scan Results in cpm

C# = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

Figure 33: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Column C-56 to C-61, Alpha and Beta Scan Survey Locations and Results.



**LEGEND**

← ## ## → = Alpha Scan Results in cpm

← ## ## → = Beta Scan Results in cpm

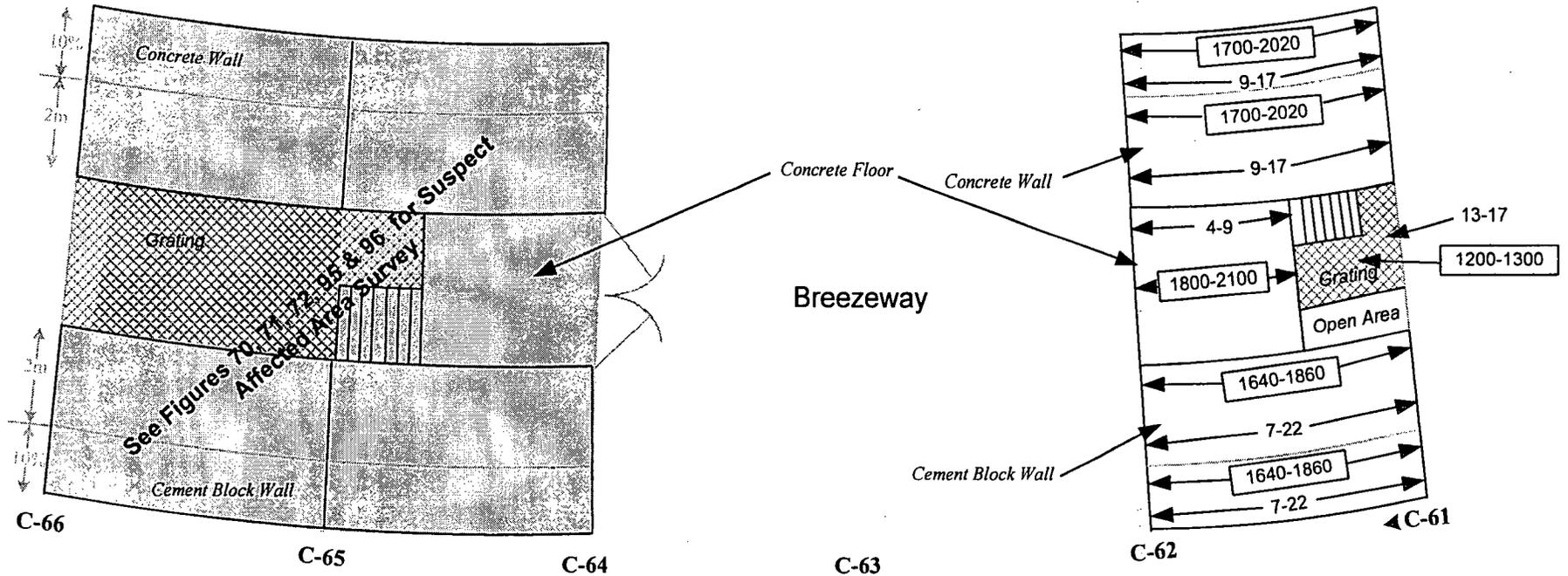
C# = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

Location	Building 2 Service Corridor		
Instruments	Model 2221	Model 2221	Model 12
Serial Number	148425	84459	138801
Calibration Due	07/31/02	09/27/02	05/11/02
Efficiency	21.09%	31.08%	22.52%
α β γ	α	β	α
Probe Number	086236	086215	145696
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	50 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C.Block	0-20 cpm
Scan MDA in DPM/ 100 cm <sup>2</sup>	X= 4.0 109	X= 0.3 643, Concrete 388, C. Block	X= 4.0 355
Surveyors: S. Finchum, B. Hunter			
Date: 5/02-09/02 (α)		Date: 5/08-14/02 (β)	

**Figure 34: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Column C-61 to C-68, Alpha and Beta Scan Survey Locations and Results.**



**LEGEND**

← ### → = Alpha Scan Results in cpm

← [##-##] → = Beta Scan Results in cpm

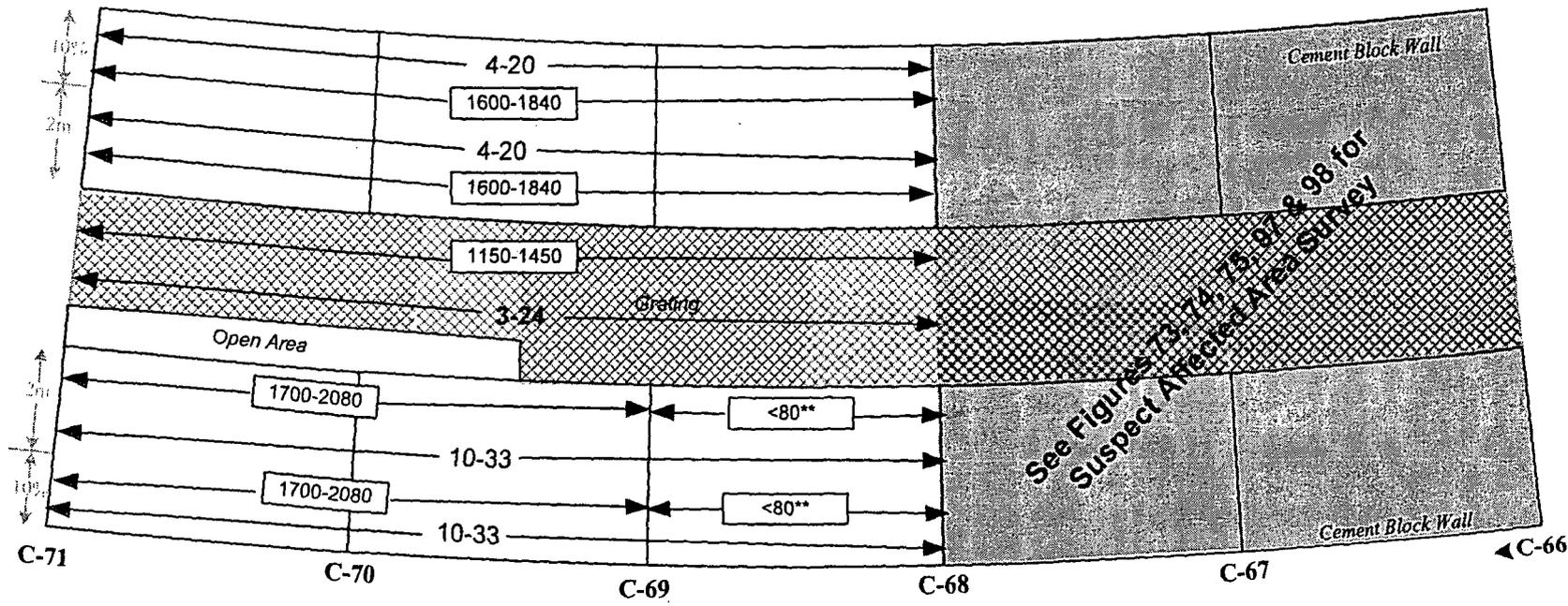
**C#** = Column Number

All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

Location	Building 2 Service Corridor		
Instruments	Model 2221	Model 2221	Model 12
Serial Number	148425	84459	138801
Calibration Due	07/31/02	09/27/02	05/11/02
Efficiency	21.09%	31.08%	22.52%
α β γ	α	β	α
Probe Number	086236	086215	145696
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	50 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C.Block	0-20 cpm
Scan MDA in DPM/ 100 cm <sup>2</sup>	X= 4.0 109	X= 0.3 643, Concrete 388, C. Block	X= 4.0 355
Surveyors: S. Finchum, B. Hunter			
Date: 5/01-09/02 (α)		Date: 5/08-13/02 (β)	

**Figure 35: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-66 to C-71  
Alpha and Beta Scan Measurement Locations and Results**



**LEGEND**

← ## ## → = Alpha Scan Results in cpm

← ##-## → = Beta Scan Results in cpm

C# = Column Number

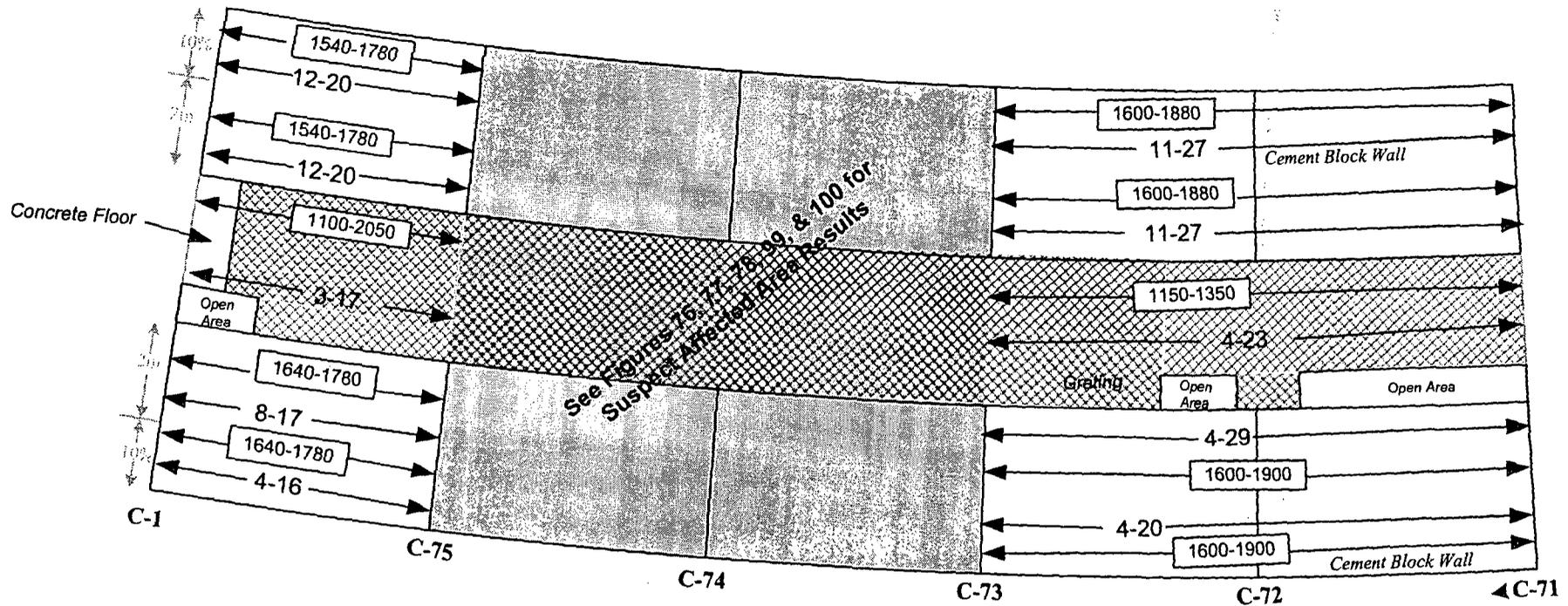
All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

#\*\* = Measurements taken with a 15 cm<sup>2</sup> probe

Location	Building 2 Service Corridor			
Instruments	Model 2221	Model 2221	Model 12	Model 3
Serial Number	148425	84459	138801	143349
Calibration Due	07/31/02	09/27/02	05/11/02	08/12/02
Efficiency	21.09%	31.08%	22.52%	24.16%
α β γ	α	β	α	β
Probe Number	086236	086215	145696	145967
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C.Block	0-20 cpm	80-100
Scan MDA in DPM/ 100 cm <sup>2</sup>	X= 4.0 109	X= 0.3 643, Concrete 388, C. Block	X= 4.0 355	X= 1.1 2759
Surveyors: S. Finchum, B. Hunter				
Date: 5/01-09/02 (α)      Date: 5/07-13/02 (β)				

Figure 36: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-71 to C-1  
Alpha and Beta Scan Measurement Locations and Results



**LEGEND**

← ## ## → = Alpha Scan Results in cpm

← ## ## → = Beta Scan Results in cpm

C# = Column Number

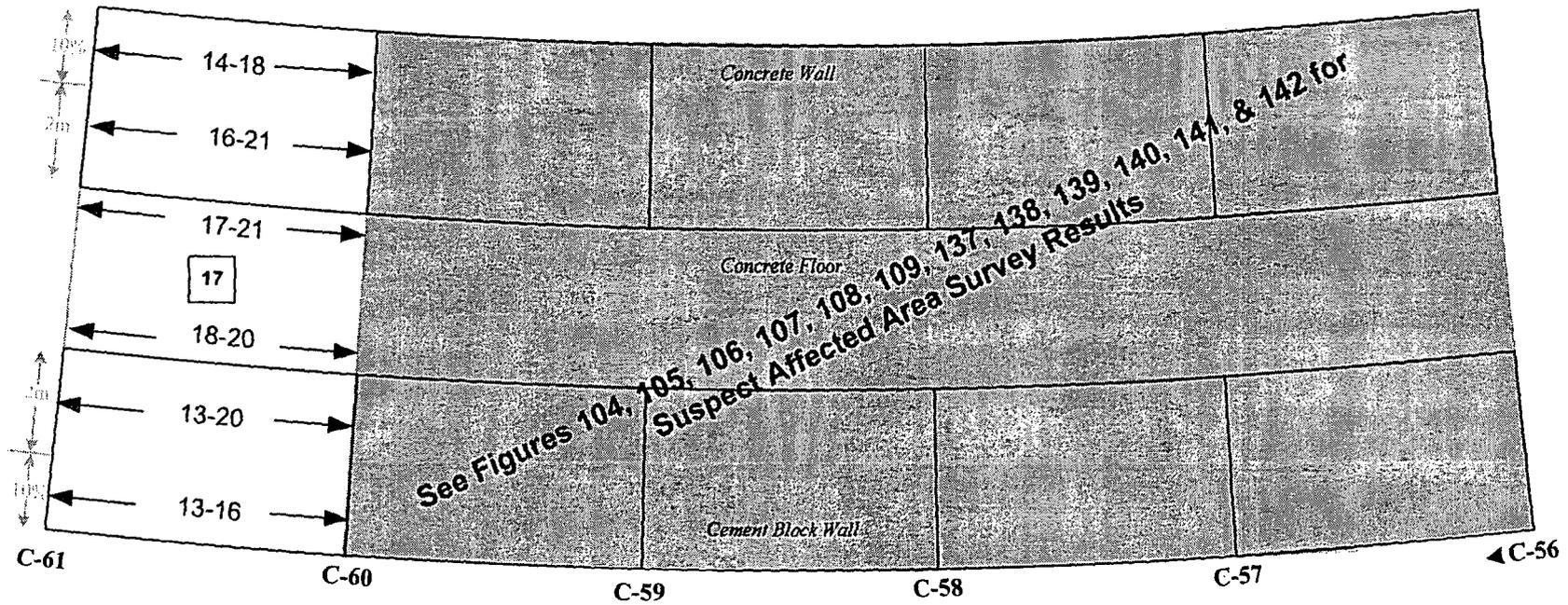
All Surface scans taken at ~ 1" from the surface

100% of surfaces below 2m and 10% above 2m scanned

### = Measurements taken with a 15 cm<sup>2</sup> probe

Location	Building 2 Service Corridor		
Instruments	Model 2221	Model 2221	Model 12
Serial Number	148425	84459	138801
Calibration Due	07/31/02	09/27/02	05/11/02
Efficiency	21.09%	31.08%	22.52%
α β γ	α	β	α
Probe Number	086236	086215	145696
Probe Size cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	50 cm <sup>2</sup>
Background in CPM	10-40 cpm	1840-2100, Concrete 1640-1850, C. Block	0-20 cpm
Scan MDA in DPM/ 100 cm <sup>2</sup>	X= 4.0 109	X= 0.3 643, Concrete 388, C. Block	X= 4.0 355
Surveyors: S. Finchum, B. Hunter			
Date: 04/30-05/09/02 (α)		Date: 5/07-13/02 (β)	

**Figure 37: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-56 to C-61  
Exposure Rate Fixed and Scan Measurement Locations and Results**



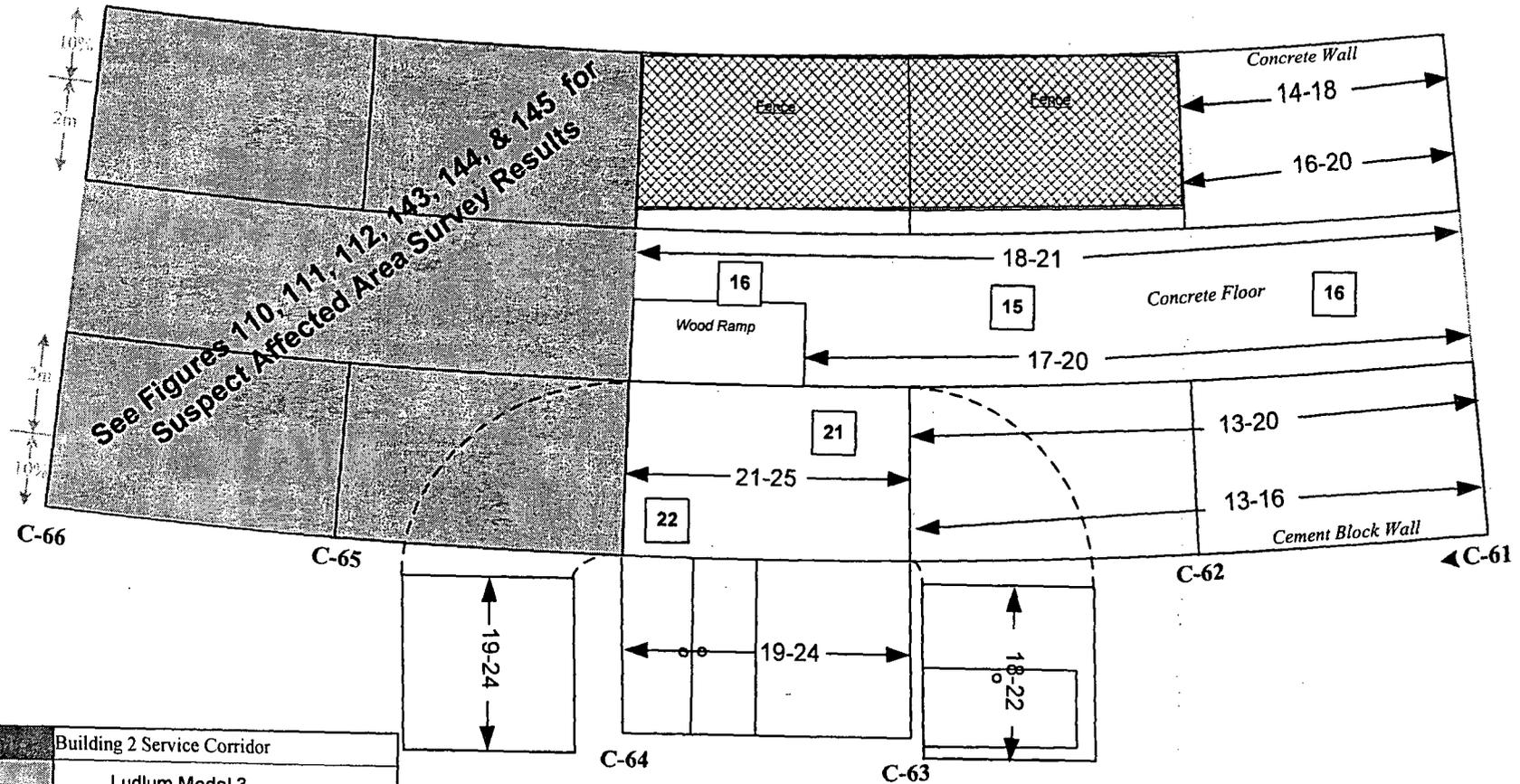
Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	3/24/02 & 07/24/02
Efficiency	NA
$\alpha$ $\beta$ $\gamma$	$\gamma$
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in $\mu$ R/hr	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : B. Hunter / W. Schuck Date: 01/29/02 - 04/24/02	

# =  $\mu$ R/hr at 1 meter

##-##  $\mu$ R/hr Range for scan survey at contact (within ~ 1") with surface

Note: 100% Scan (@ 1" from surface) on walls below 2m and original floor, 10 % Scan on walls above 2m.

**Figure 38: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-61 to C-66  
Exposure Rate Fixed and Scan Measurement Locations and Results**



Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	3/24/02 & 07/24/02
Efficiency	NA
α β γ	γ
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in μR/hr	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : B. Hunter / W. Schuck Date: 01/29/02 - 04/24/02	

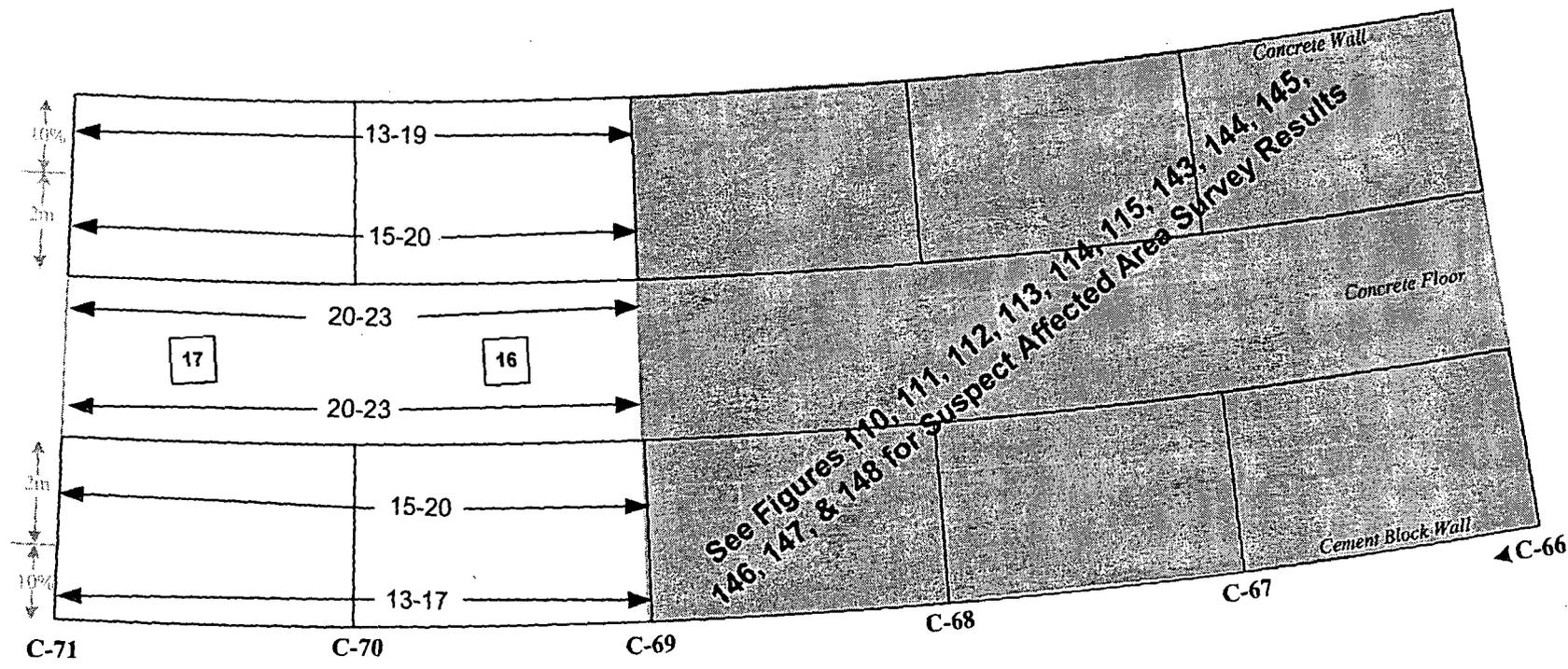
# = μR/hr at 1 meter

##-## μR/hr Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

Note: 100% Scan (@ 1" from surface) on walls below 2m and original floor, 10 % Scan on walls above 2m.

Figure 39: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-66 to C-71  
 Exposure Rate Fixed and Scan Measurement Locations and Results



# =  $\mu\text{R/hr}$  at 1 meter

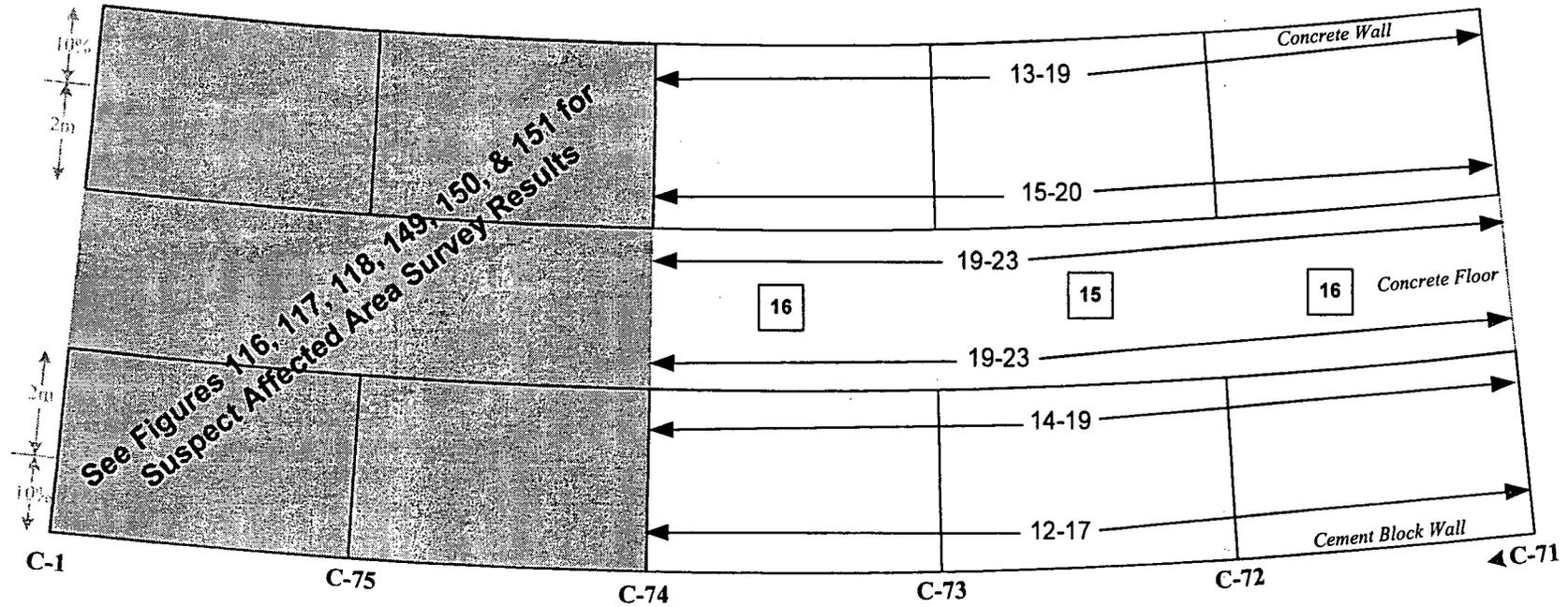
##-##  $\mu\text{R/hr}$  Range for scan survey at contact (within ~ 1") with surface

C# = column number

Note: 100% Scan (@ 1" from surface) on walls below 2m and original floor, 10 % Scan on walls above 2m.

Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	3/24/02 & 07/24/02
Efficiency	NA
$\alpha$ $\beta$ $\gamma$	$\gamma$
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in $\mu\text{R/hr}$	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : B. Hunter / W. Schuck Date: 02/01/02 - 04/24/02	

**Figure 40: Building 2 Service Corridor, Section C, Level 1, Non-Suspect Affected Area, Columns C-71 to C-1 Exposure Rate Fixed and Scan Measurement Locations and Results**



Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	3/24/02 & 07/24/02
Efficiency	NA
$\alpha$ $\beta$ $\gamma$	$\gamma$
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in $\mu$ R/hr	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : B. Hunter / W. Schuck Date: 02/05/02 - 04/24/02	

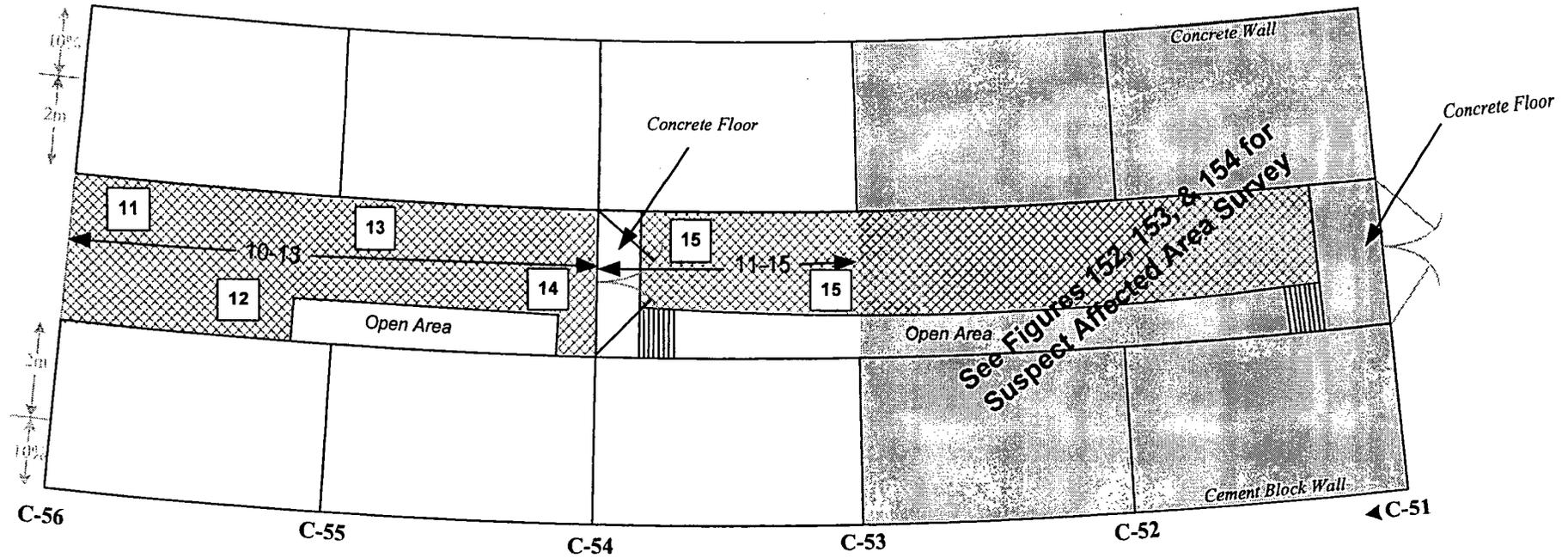
# =  $\mu$ R/hr at 1 meter

##-##  $\mu$ R/hr Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

Note: 100% Scan (@ 1" from surface) on walls below 2m and original floor, 10 % Scan on walls above 2m.

**Figure 41: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-51 to C-56  
Exposure Rate Fixed and Scan Measurement Locations and Results**



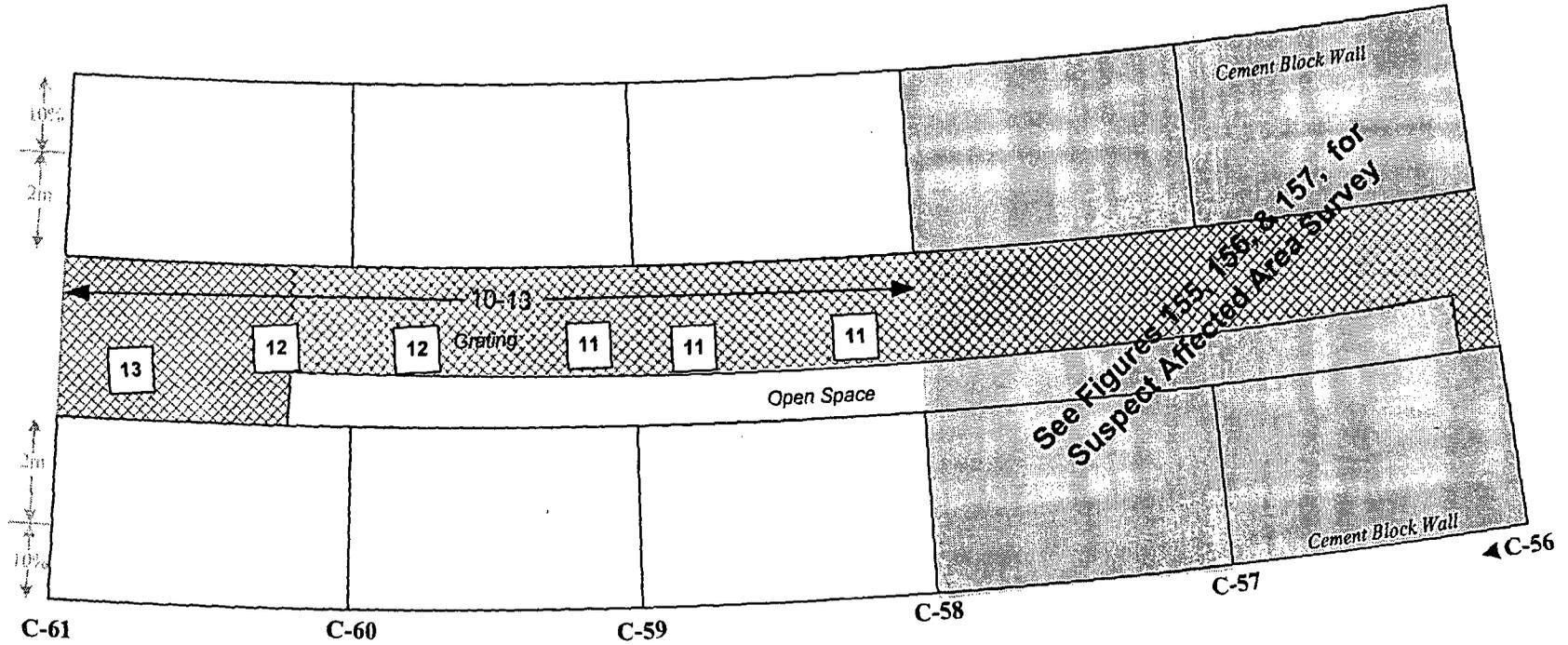
Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	07/24/02
Efficiency	NA
$\alpha$ $\beta$ $\gamma$	$\gamma$
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in $\mu\text{R/hr}$	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : <u>B. Hunter</u> Date: <u>04/29/02</u>	

# =  $\mu\text{R/hr}$  at 1 meter

##-##  $\mu\text{R/hr}$  Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

Figure 42: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-56 to C-61  
 Exposure Rate Fixed and Scan Measurement Locations and Results



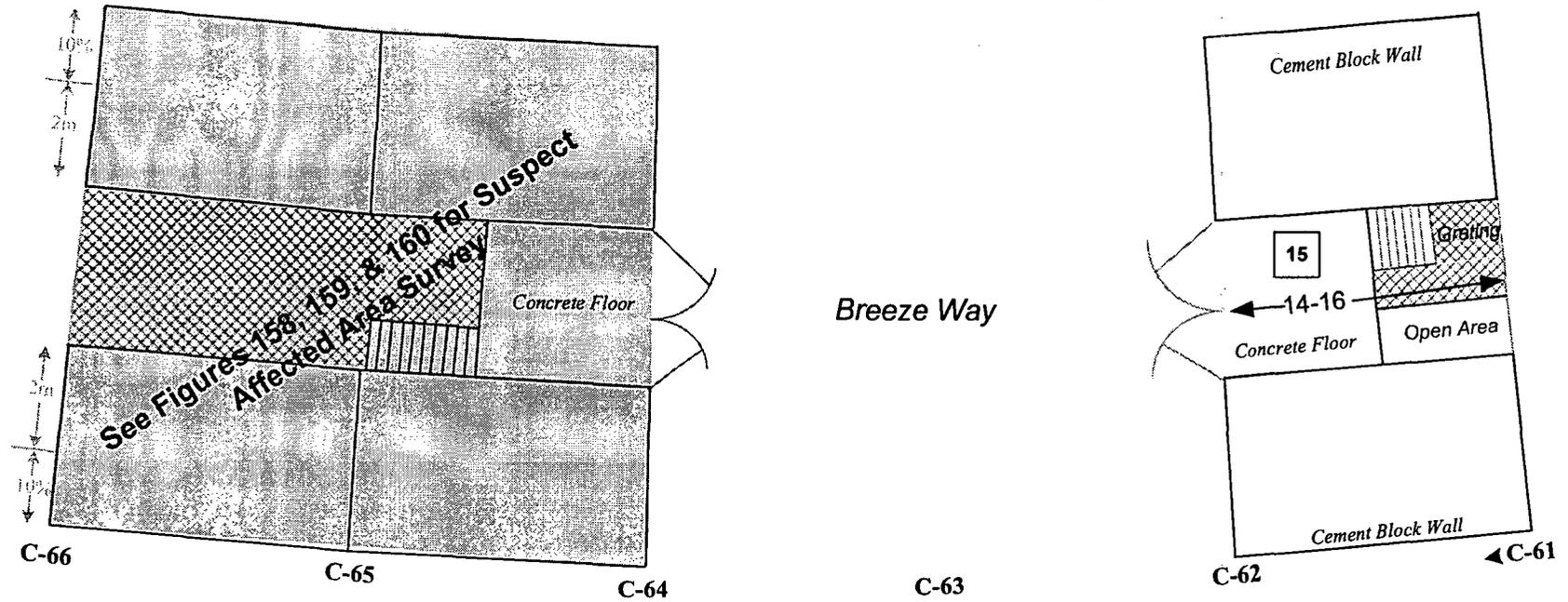
Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	07/24/02
Efficiency	NA
$\alpha$ $\beta$ $\gamma$	$\gamma$
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in $\mu\text{R/hr}$	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors	B. Hunter Date: 04/29/02

# =  $\mu\text{R/hr}$  at 1 meter

##-##  $\mu\text{R/hr}$  Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

**Figure 43: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-61 to C-66  
Exposure Rate Fixed and Scan Measurement Locations and Results**



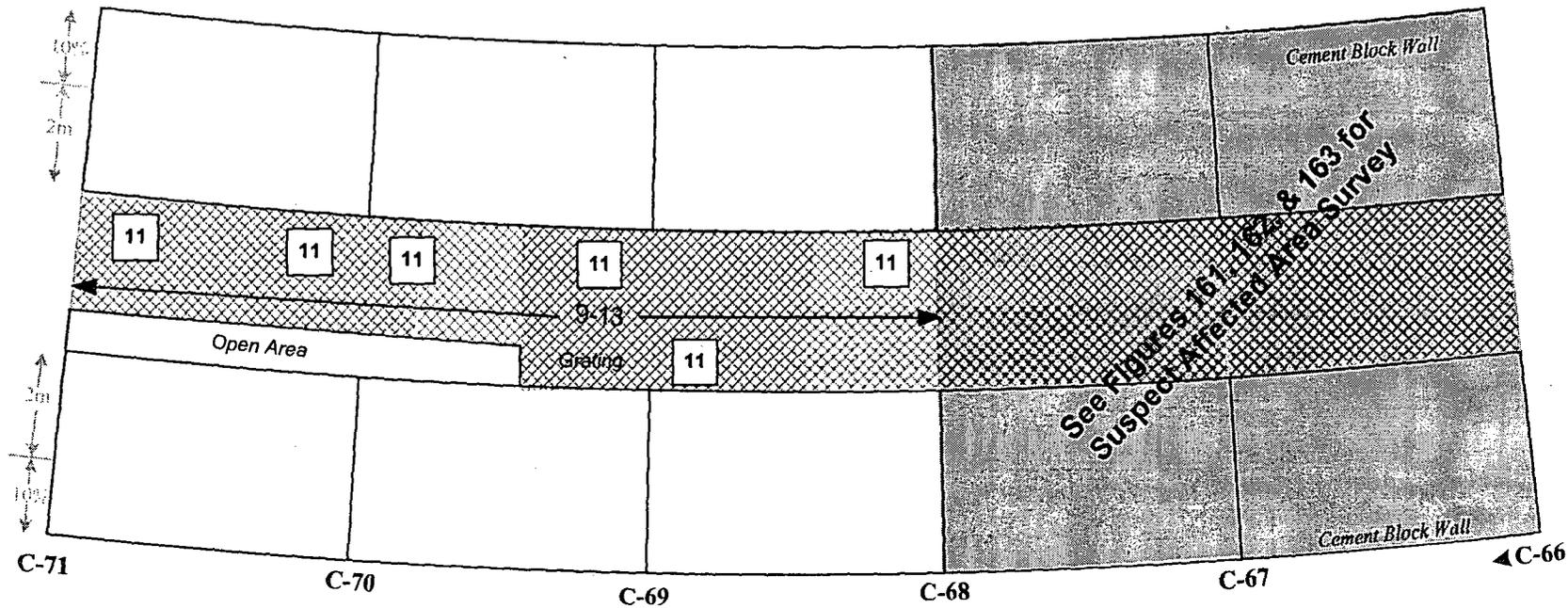
Location:	Building 2 Service Corridor
Instruments:	Ludlum Model 3
Serial Number:	151348
Calibration Due:	07/24/02
Efficiency:	NA
$\alpha$ $\beta$ $\gamma$ :	$\gamma$
Probe Number:	163169
Probe:	2 x 2 NaI(Tl)
Typical Background in $\mu$ R/hr:	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : B. Hunter Date: 04/29/02	

# =  $\mu$ R/hr at 1 meter

###  $\mu$ R/hr Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

**Figure 44: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-66 to C-71 Exposure Rate Fixed and Scan Measurement Locations and Results**



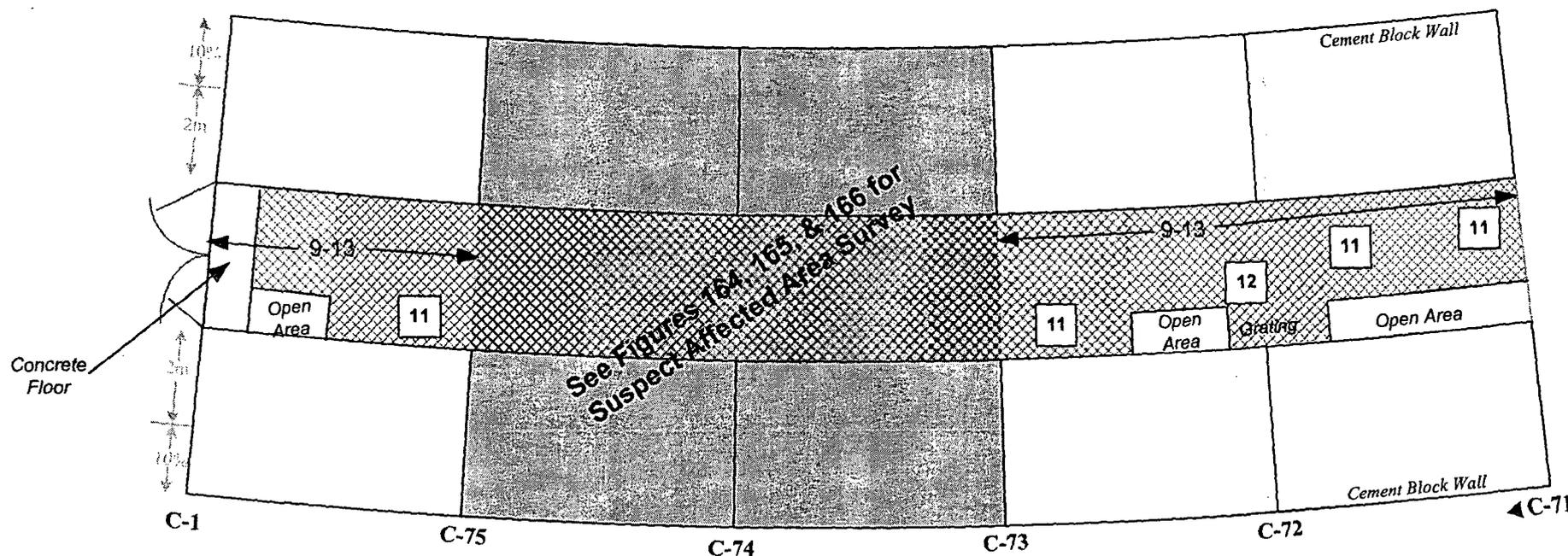
Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	07/24/02
Efficiency	NA
α β γ	γ
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in μR/hr	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors: B. Hunter Date: 04/29/02	

# = μR/hr at 1 meter

##-## μR/hr Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

**Figure 45: Building 2 Service Corridor, Section C, Level 2, Non-Suspect Affected Area, Columns C-71 to C-1  
Exposure Rate Fixed and Scan Measurement Locations and Results**



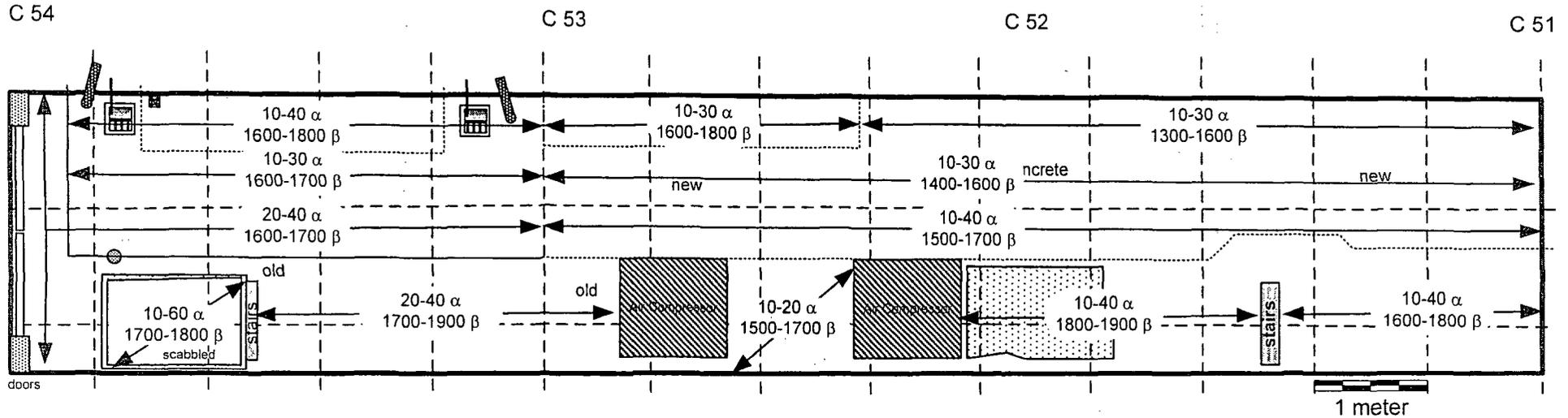
Location	Building 2 Service Corridor
Instruments	Ludlum Model 3
Serial Number	151348
Calibration Due	07/24/02
Efficiency	NA
α β γ	γ
Probe Number	163169
Probe	2 x 2 NaI(Tl)
Typical Background in $\mu\text{R/hr}$	13-15, @ 1m, Concrete 20-25, @ 1m in Enclosed Concrete Spaces 22-28 @ contact in Enclosed Concrete Spaces
Surveyors : <u>B. Hunter</u> Date: <u>04/29/02</u>	

# =  $\mu\text{R/hr}$  at 1 meter

##-##  $\mu\text{R/hr}$  Range for scan survey at contact (within ~ 1") with surface

C-## = Column Number

Figure 46: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 51 to C 54  
Alpha and Beta Scan Measurement Locations and Results



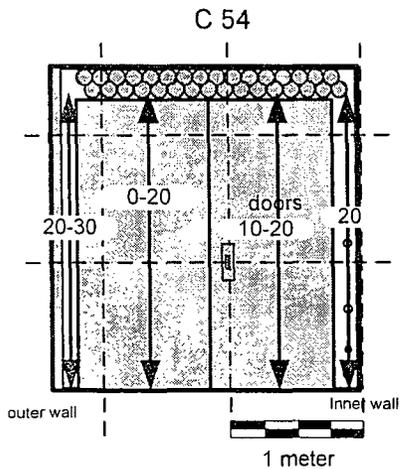
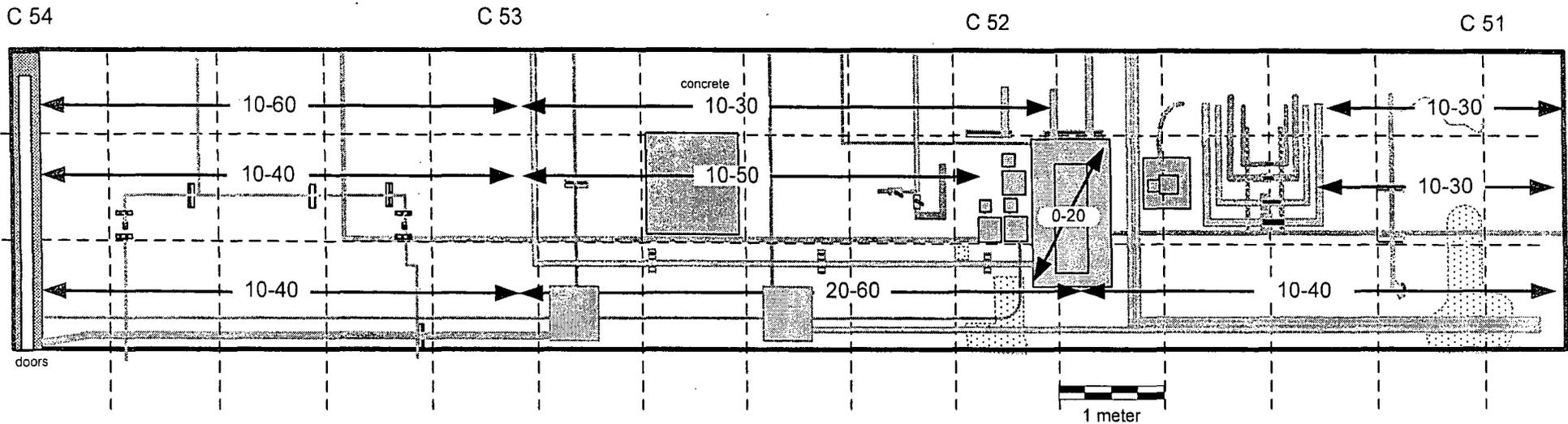
Notes:

1. 100% of accessible surface scanned.
2. ##-##  $\alpha$  Denotes alpha scan range in cpm.
3. ####-####  $\beta$  Denotes beta scan range in cpm.

Instrument		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> $\beta$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	149017	086215
Cal Due Date	07-06-04	07-19-04
Efficiency	30.39%	22.14%
Bkgd. concrete	1300-2000 cpm	10-60 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 01-27-04 & 01-28-04

Figure 47: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 51 to C 54  
Alpha Scan Measurement Locations and Results



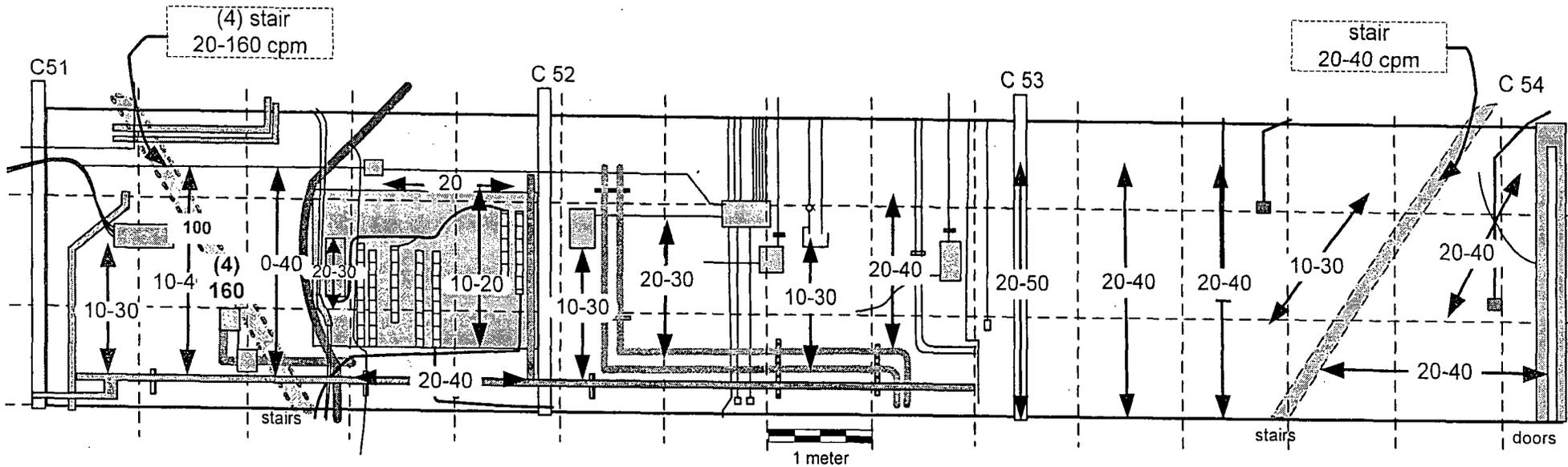
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings 0-20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd concrete	<20 cpm	10-60 cpm
Bkgd metal	<20 cpm	0-40 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 01-28-04 & 02-09-04

Figure 48: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 51 to C 54  
Alpha Scan Measurement Locations and Results



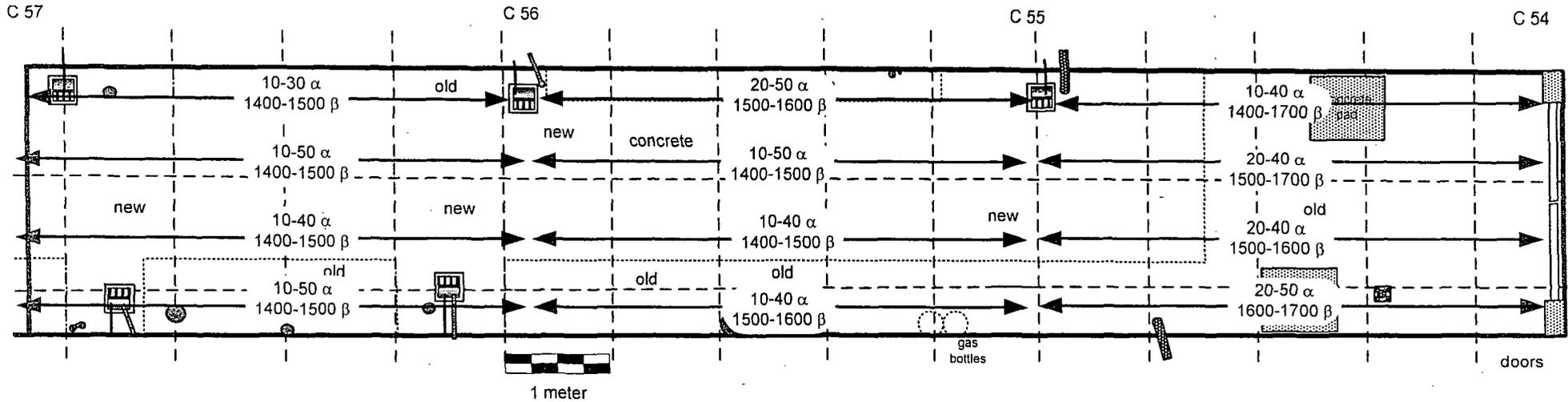
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \# \# \rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings 0-20 cpm.
4. Maximum fixed alpha measurement with the 50 cm<sup>2</sup> probe was 50 cpm, 266 dpm/100 cm<sup>2</sup>, on the stair tread as shown.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd. Cement blk	<20 cpm	10-60 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Dates: 02-05-04 & 02-06-04

Figure 49: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 54 to C 57  
Alpha and Beta Scan Measurement Locations and Results



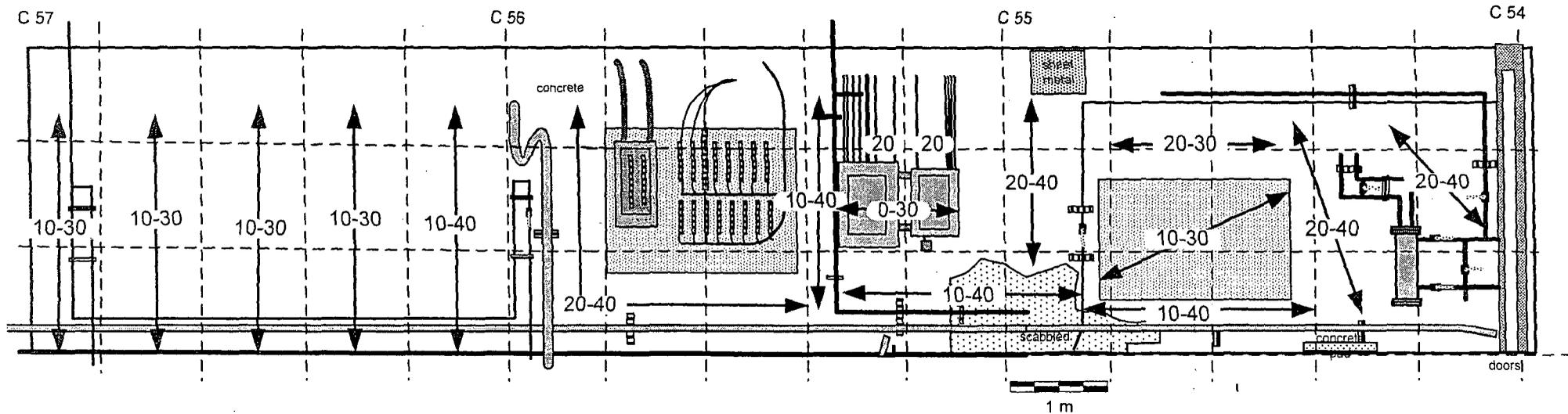
Notes:

1. 100% of accessible surface scanned.
2. ##-## α Denotes alpha scan range in cpm.
3. #### ##### β Denotes beta scan range in cpm.

Instrument		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> β	434 cm <sup>2</sup> α
Probe Serial #	149017	086215
Cal Due Date	07-06-04	07-19-04
Efficiency	30.39%	22.14%
Bkgd. concrete	1300-2000 cpm	10-60 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 01-27-04 to 01-28-04

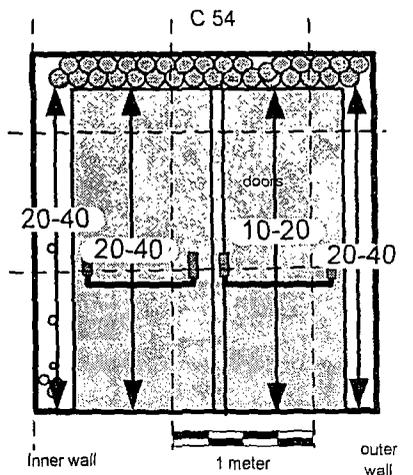
Figure 50: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 54 to C 57  
Alpha Scan Measurement Locations and Results



Notes:

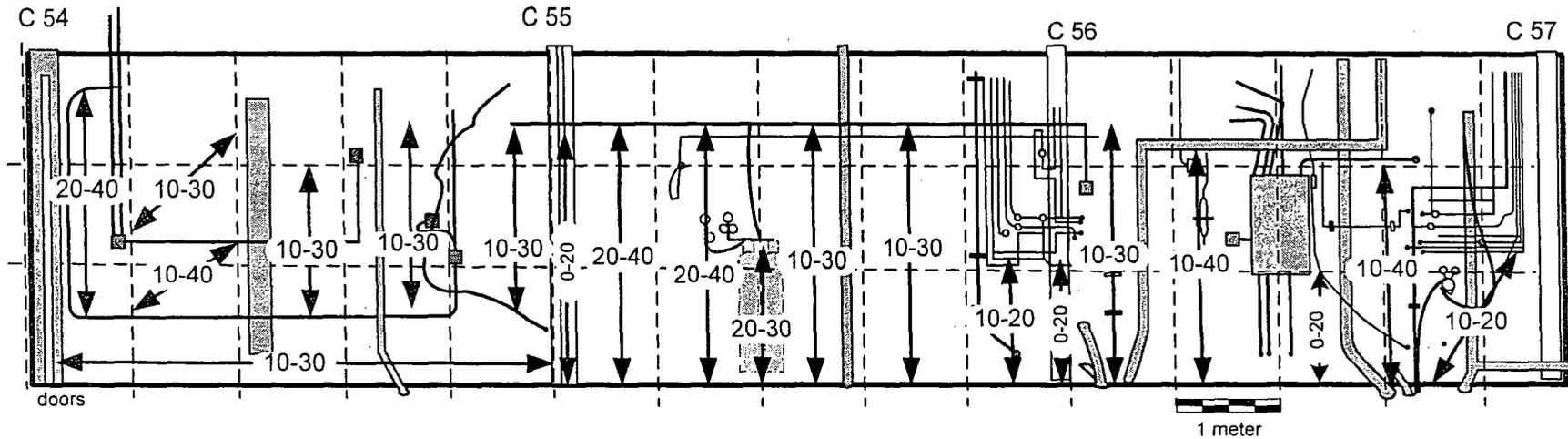
1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2. ← ## → Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings 0-30 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd concrete	<20 cpm	10-60 cpm
Bkgd metal	<20 cpm	0-40 cpm



Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-05-04 & 2-09-04

Figure 51: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 54 to C 57  
Alpha Scan Measurement Locations and Results



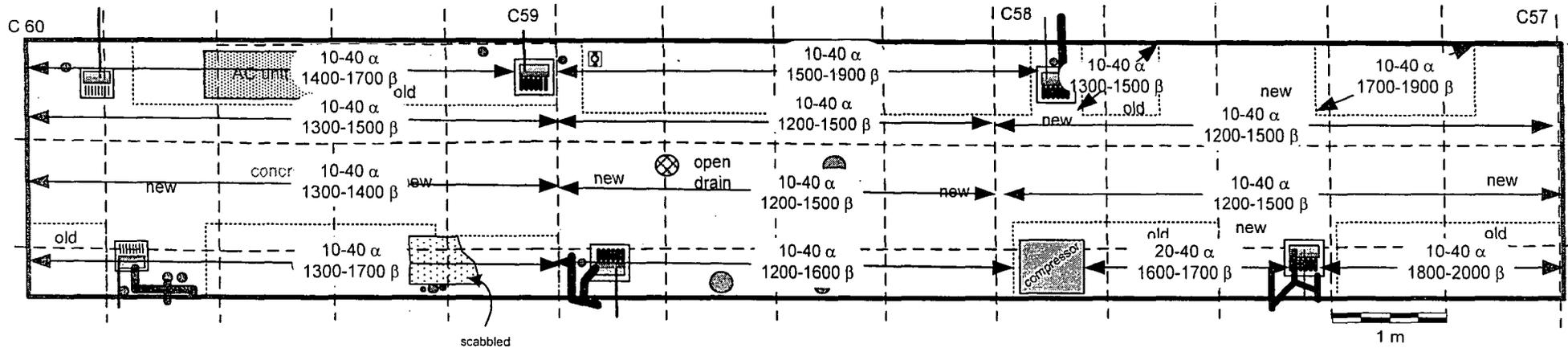
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\# \rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd cement blk	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Dates: 02-05-04 & 02-06-04

Figure 52: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 57 to C 60  
Alpha and Beta Scan Measurement Locations and Results



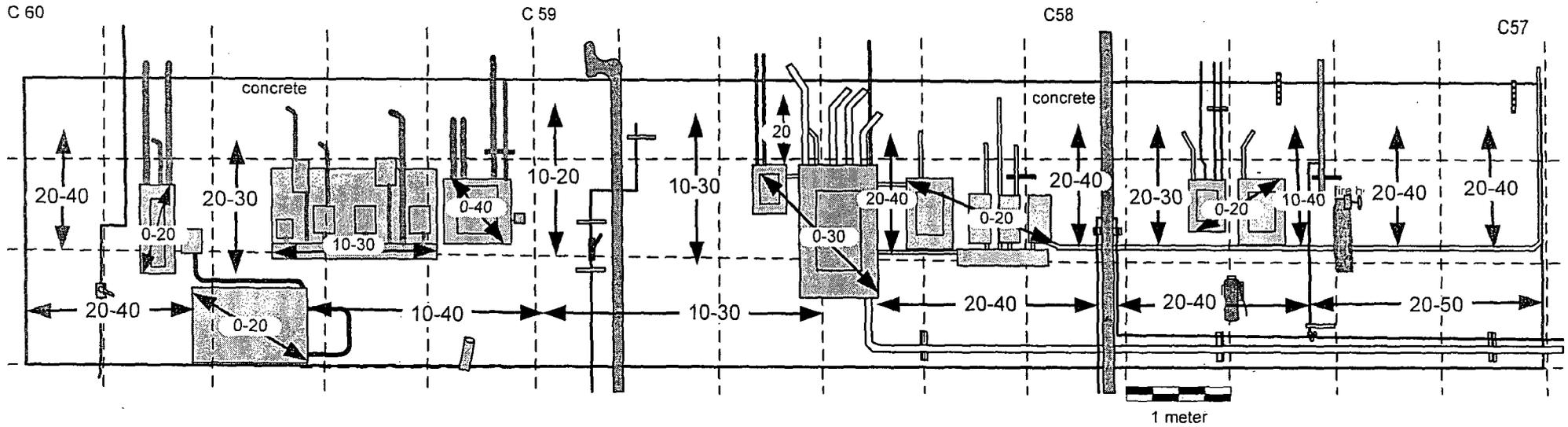
Notes:

1. 100% of accessible surface scanned.
2. ### alpha Denotes alpha scan range in cpm.
3. ##### beta Denotes beta scan range in cpm.

Instrument		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> beta	434 cm <sup>2</sup> alpha
Probe Serial #	149017	086215
Cal Due Date	07-06-04	07-19-04
Efficiency	30.39%	22.14%
Bkgd. concrete	1300-2000 cpm	10-60 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 01-28-04 & 02-05-04

Figure 53: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 57 to C 60  
Alpha Scan Measurement Locations and Results



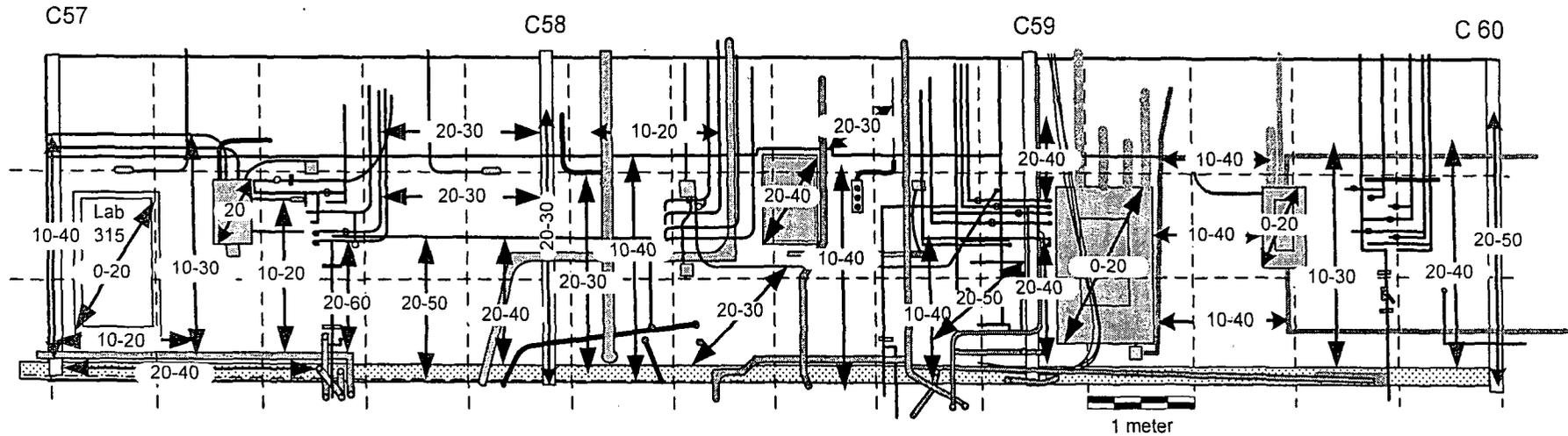
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd. concrete	<20 cpm	10-60 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Surveys conducted by: R. Stowell & G. Sayer  
Date: 02-09-04

Figure 54: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 57 to C 60  
Alpha Scan Measurement Locations and Results



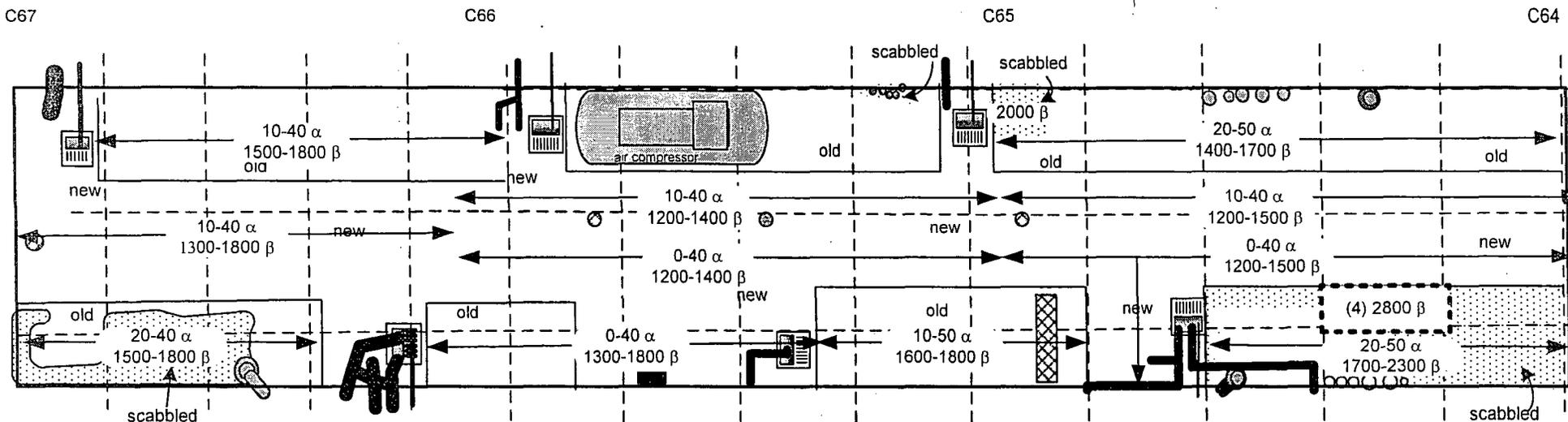
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd. cement block	<20 cpm	10-30 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Date: 02-06-04

Figure 55: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 64 to C 67  
Alpha and Beta Scan Measurement Locations and Results



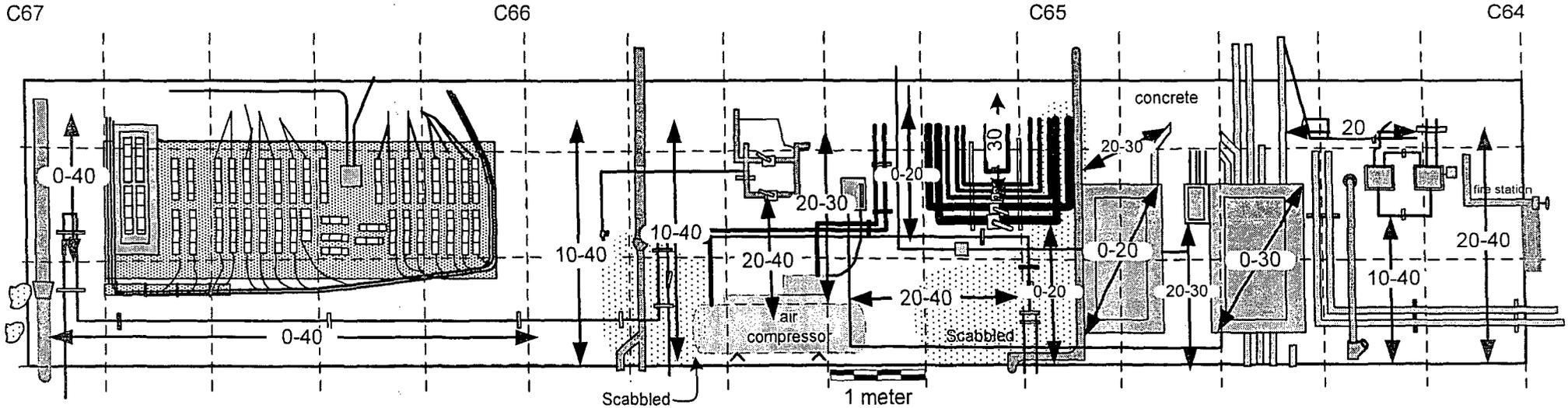
Notes:

- 100% of accessible surface scanned.
- ### α Denotes alpha scan range in cpm.
- #### β Denotes beta scan range in cpm.
- Five fixed beta measurements were taken in this area, as shown on Figure 110. Maximum result was 1852 dpm/100 cm<sup>2</sup> with an average of 1502 dpm/100 cm<sup>2</sup>.

Instruments		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> β	434 cm <sup>2</sup> α
Probe Serial #	149017	086215
Cal Due Date	07-06-04	07-19-04
Efficiency	30.39%	22.14%
Bkgd concrete	1300-2000 cpm	10-60 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-05-04

Figure 56: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 64 to C 67  
Alpha Scan Measurement Locations and Results



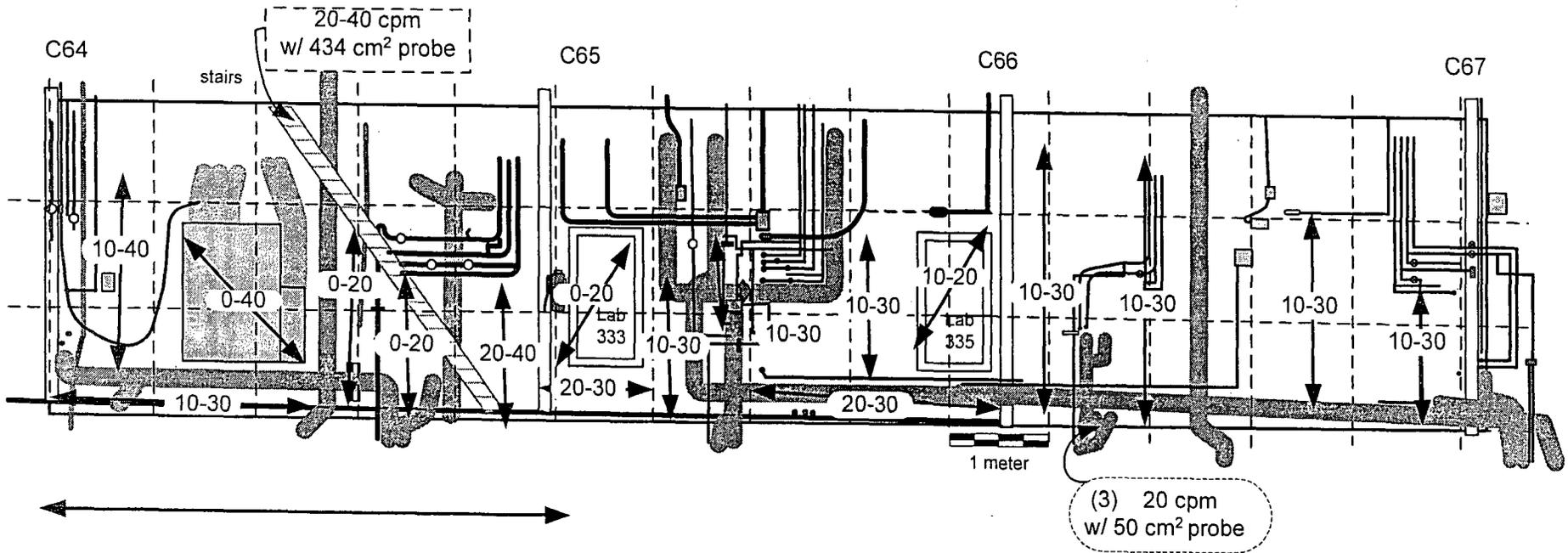
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2. ← ## → Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd concrete	<20 cpm	10-60 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Date: 02-11-04

Figure 57: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 64 to C 67  
Alpha Scan Measurement Locations and Results



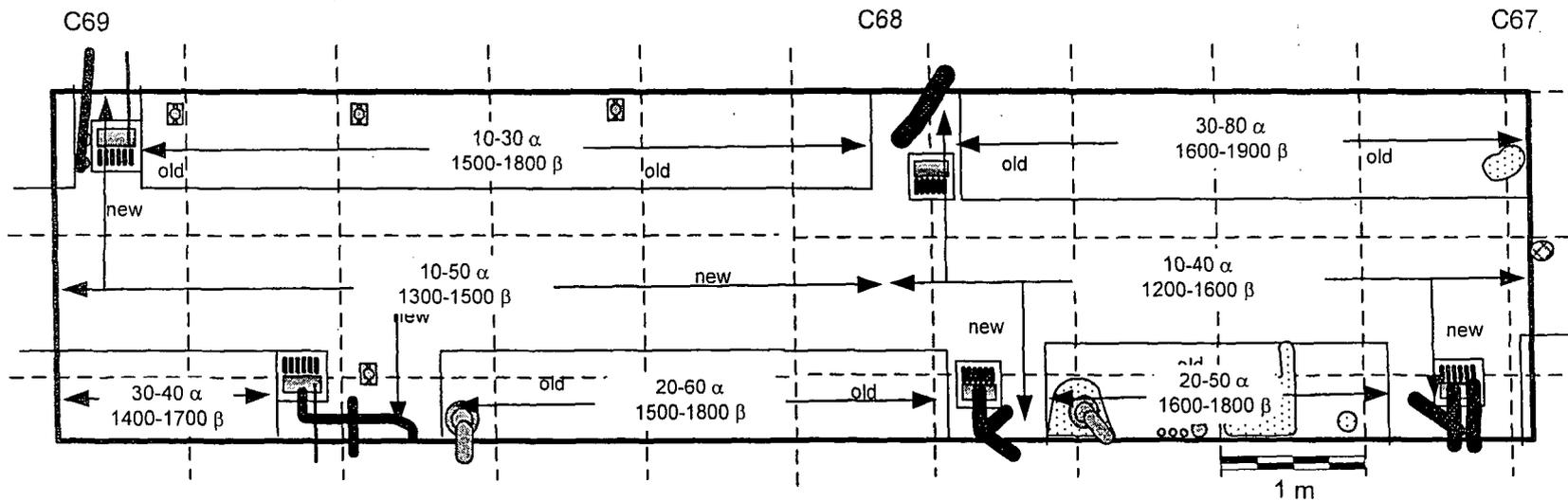
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2. ← ## → Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm except as noted.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd. cement block.	<20 cpm	10-30 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell  
Date: 02-11-04

Figure 58: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 67 to C 69  
Alpha and Beta Scan Measurement Locations and Results



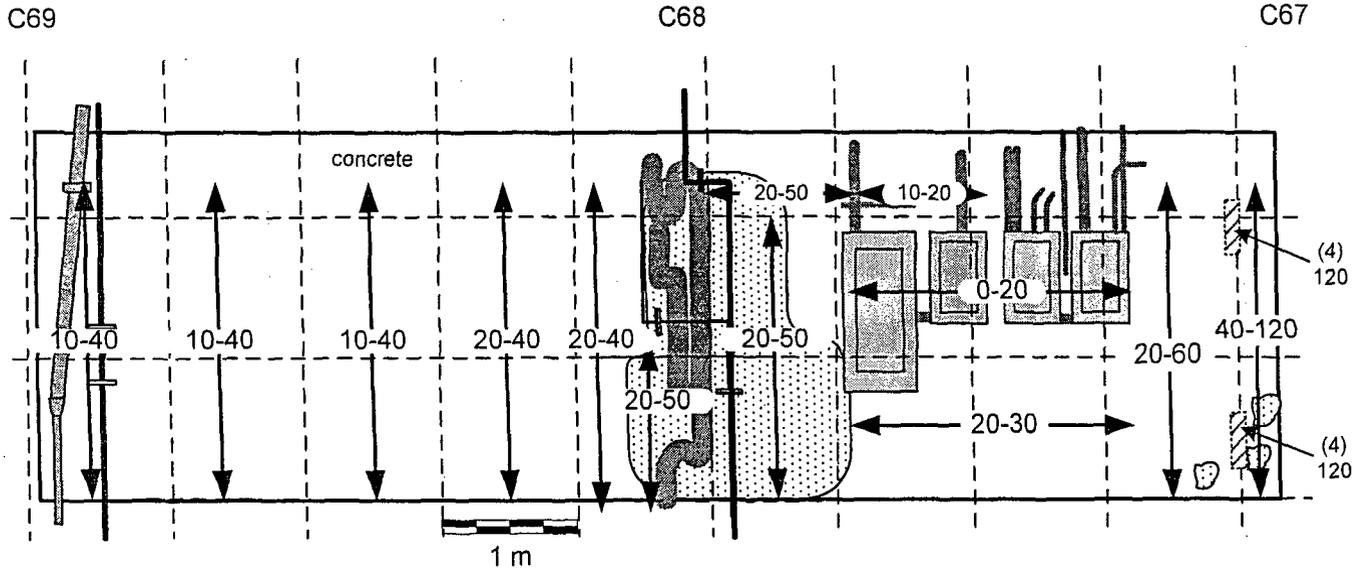
Notes:

1. 100% of accessible surface scanned.
2. ##-##  $\alpha$  Denotes alpha scan range in cpm.
3. #####-#####  $\beta$  Denotes beta scan range in cpm.

Instrument		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> $\beta$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	149017	086215
Cal Due Date	07-06-04	07-19-04
Efficiency	30.39%	22.14%
Bkgd concrete	1300-2000 cpm	10-60 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-05-04

Figure 59: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 67 to C 69  
Alpha Scan Measurement Locations and Results



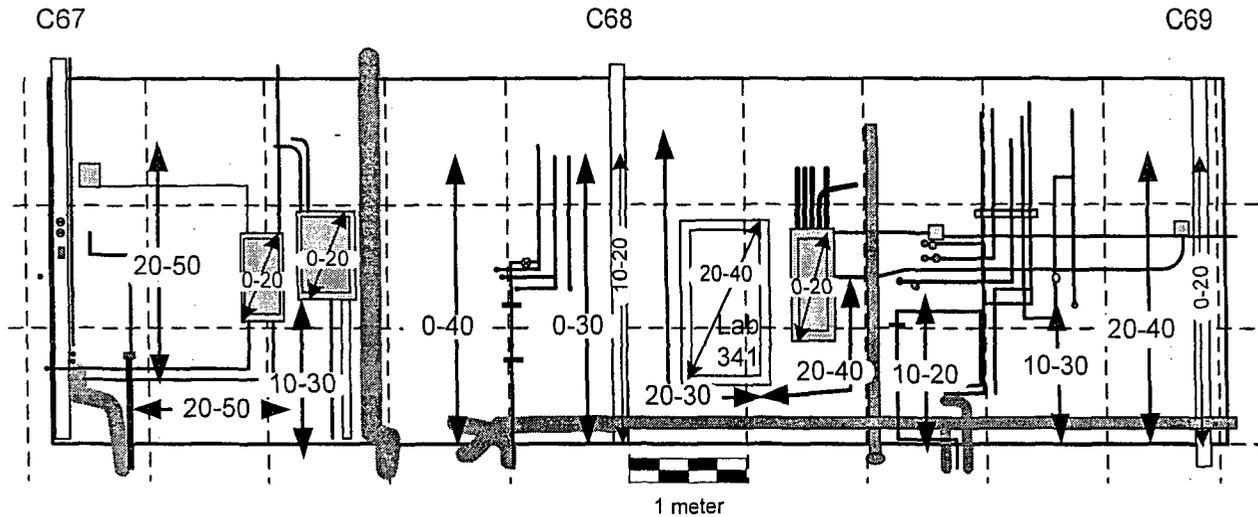
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings <20 cpm.
4. Scans with the 50 cm<sup>2</sup> probe in these elevated, 120 cpm with the 434 cm<sup>2</sup> probe, areas were 0-30 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd. concrete	<20 cpm	10-60 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Date: 02-11-04

Figure 60: Building 2 Service Corridor First (Lowest) Level Outer Wall Column C 67 to C 69  
Alpha Scan Measurement Locations and Results



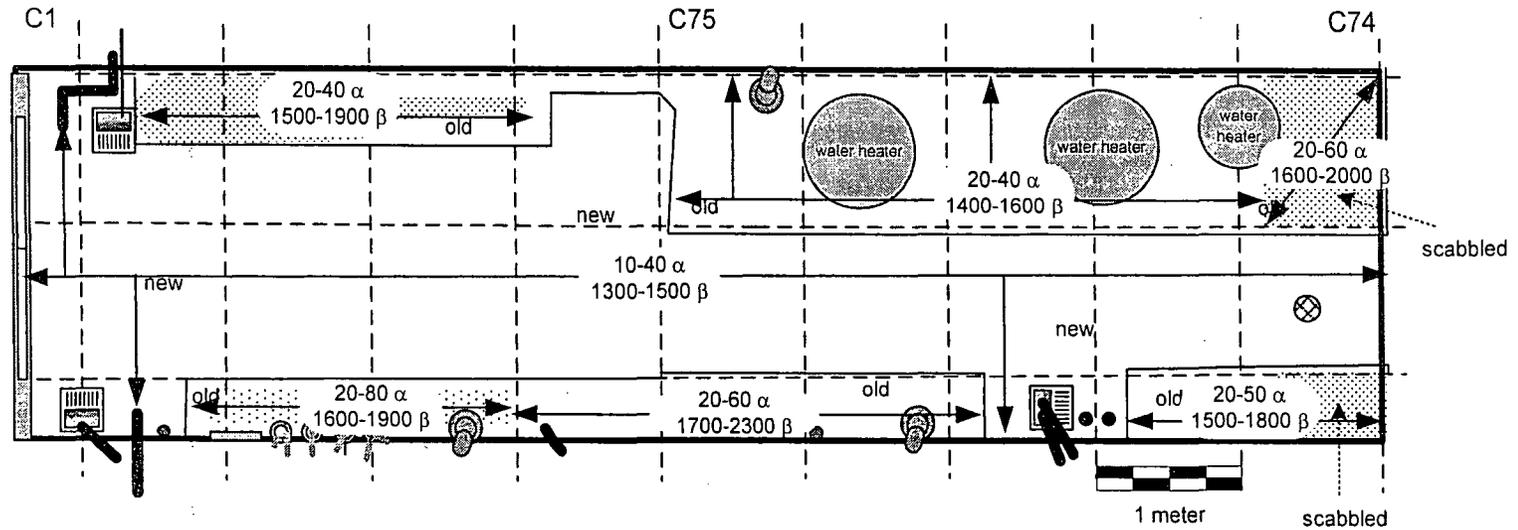
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> $\alpha$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd. cement block	<20 cpm	10-30 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Date: 02-11-04

Figure 61: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 74 to C 1  
Alpha and Beta Scan Measurement Locations and Results



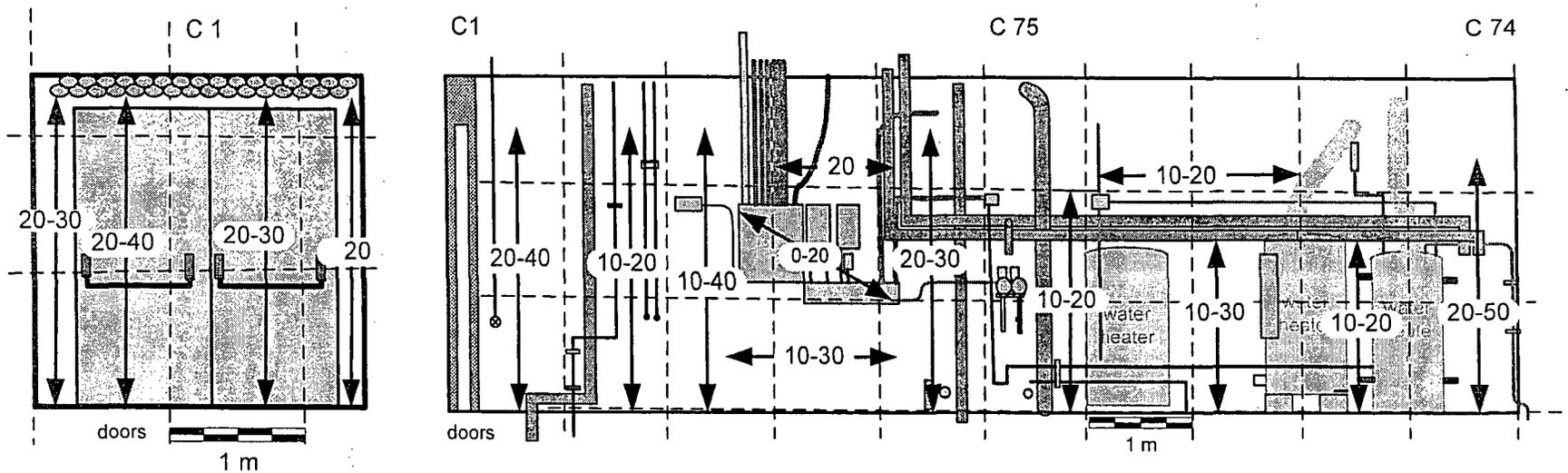
Notes:

1. 100% of accessible surface scanned.
2. ##-##  $\alpha$  Denotes alpha scan range in cpm.
3. #####-#####  $\beta$  Denotes beta scan range in cpm.

Instrument		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> $\beta$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	149017	086215
Cal Due Date	07-06-04	07-19-04
Efficiency	30.39%	22.14%
Bkgd concrete	1300-2000 cpm	10-60 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-05-04

Figure 62: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 74 to C 1  
Alpha Scan Measurement Locations and Results



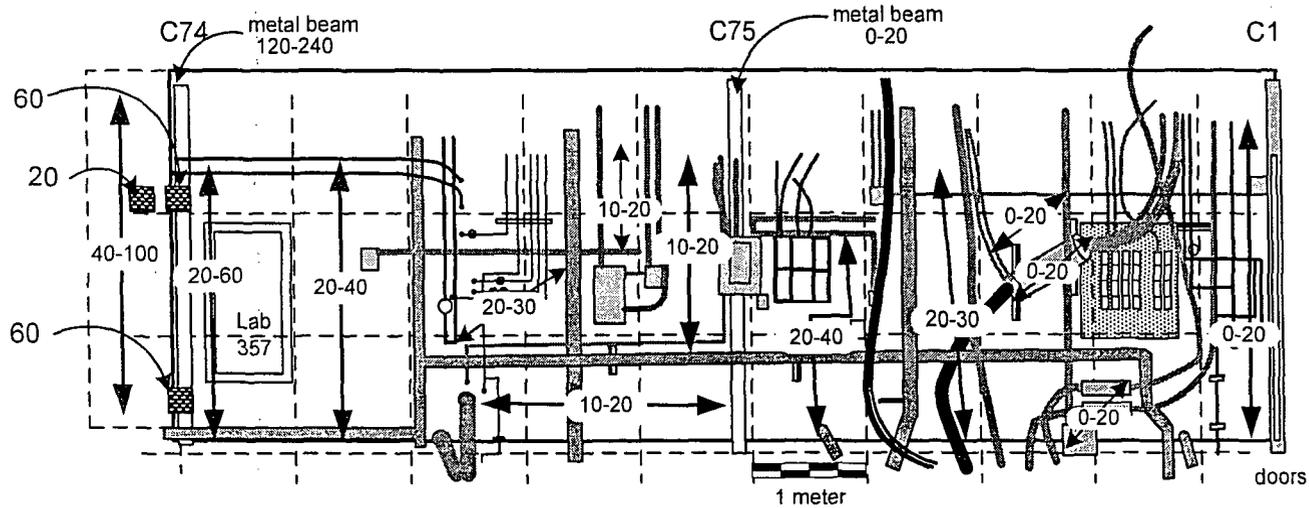
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd concrete	<20 cpm	10-60 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Dates: 02-12-04 & 02-13-04

Figure 63: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 74 to C 1  
Alpha Scan Measurement Locations and Results



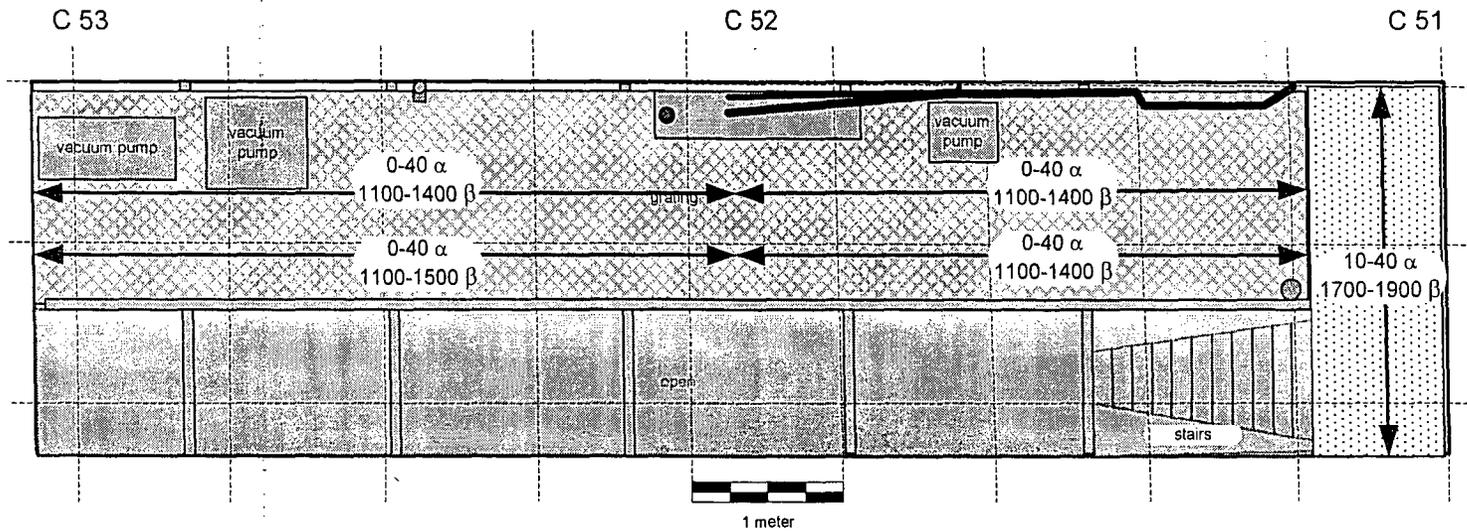
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\# \rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm except as noted.
4.  $\#\#$   Denotes fixed measurement, in cpm, taken with the 50 cm<sup>2</sup> probe at the scan locations with the highest readings. Maximum measurement was 60 cpm on metal, 355 dpm/100 cm<sup>2</sup>.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	03-11-04	07-19-04
Efficiency	22.52%	22.14%
Bkgd cement block	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell & G. Sayer  
Date: 02-12-04 & 02-17-04

Figure 64: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 51 to C 53  
Alpha and Beta Scan Measurement Locations and Results



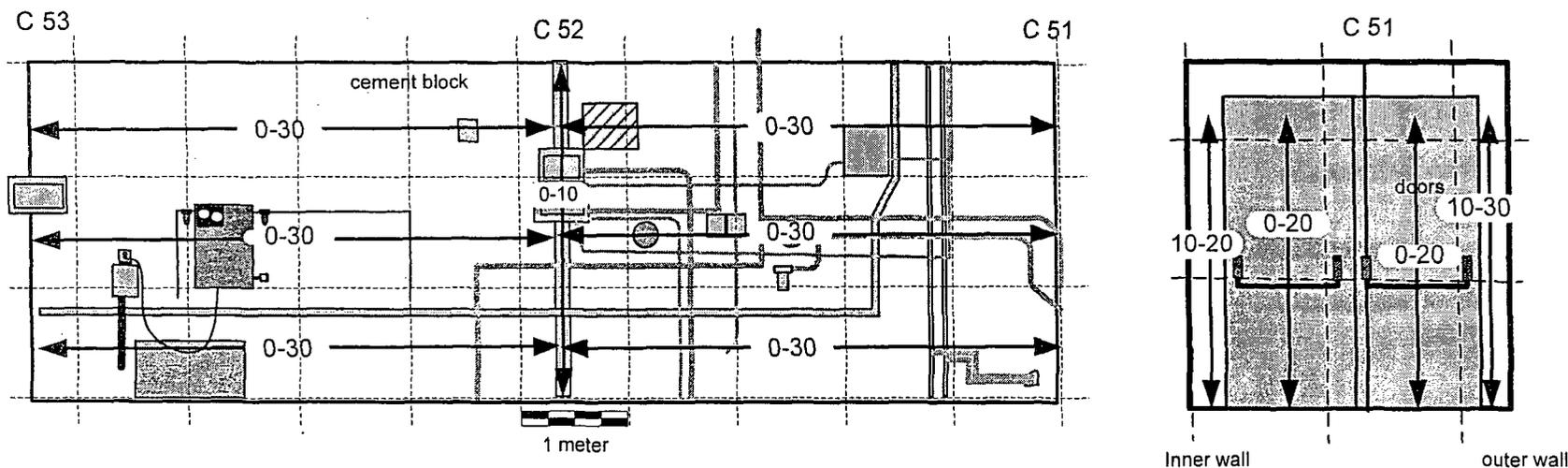
Notes:

1. 100% of accessible surface scanned.
2. ##-##  $\alpha$  Denotes alpha scan range in cpm.
3. #####-#####  $\beta$  Denotes beta scan range in cpm.

Instruments		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> $\beta$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	149017	086215
Cal Due Date	08-06-04	08-06-04
Efficiency	30.39%	22.14%
Bkgd. concrete	1300-2000 cpm	10-60 cpm
Bkgd. metal grating	1000-1400 cpm	0-40 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-26-04

Figure 65: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 51 to C 53  
Alpha Scan Measurement Locations and Results



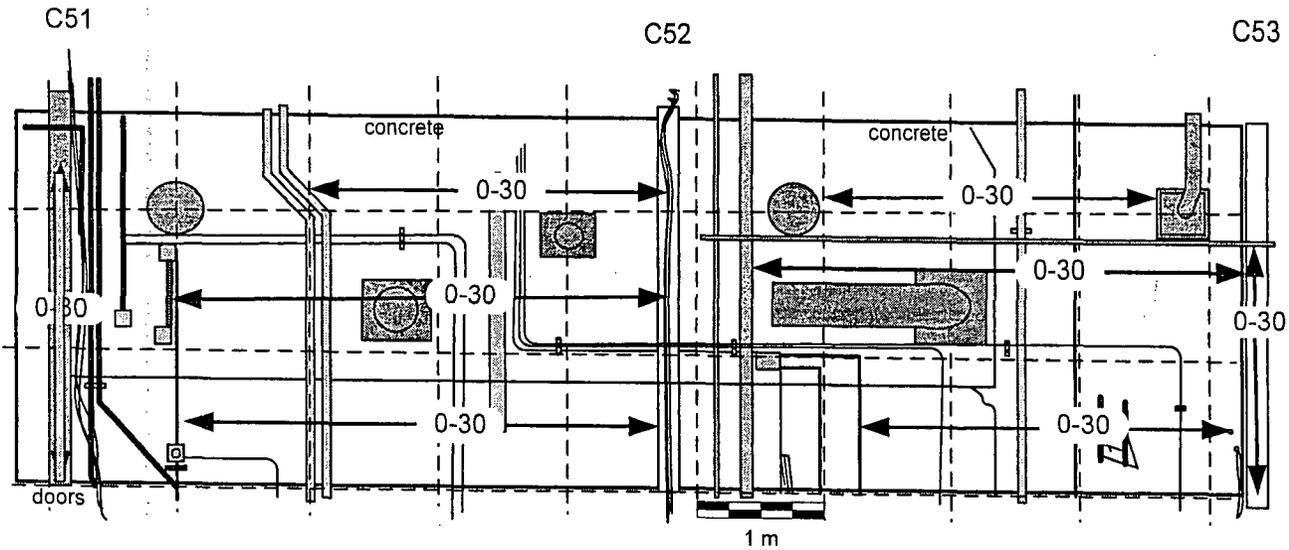
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2. ← ## → Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe. All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	01-05-05	01-13-05
Efficiency	22.52%	22.14%
Bkgd cement block	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-12-04 & 11-10-04

Figure 66: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 51 to C 53  
Alpha Scan Measurement Locations and Results



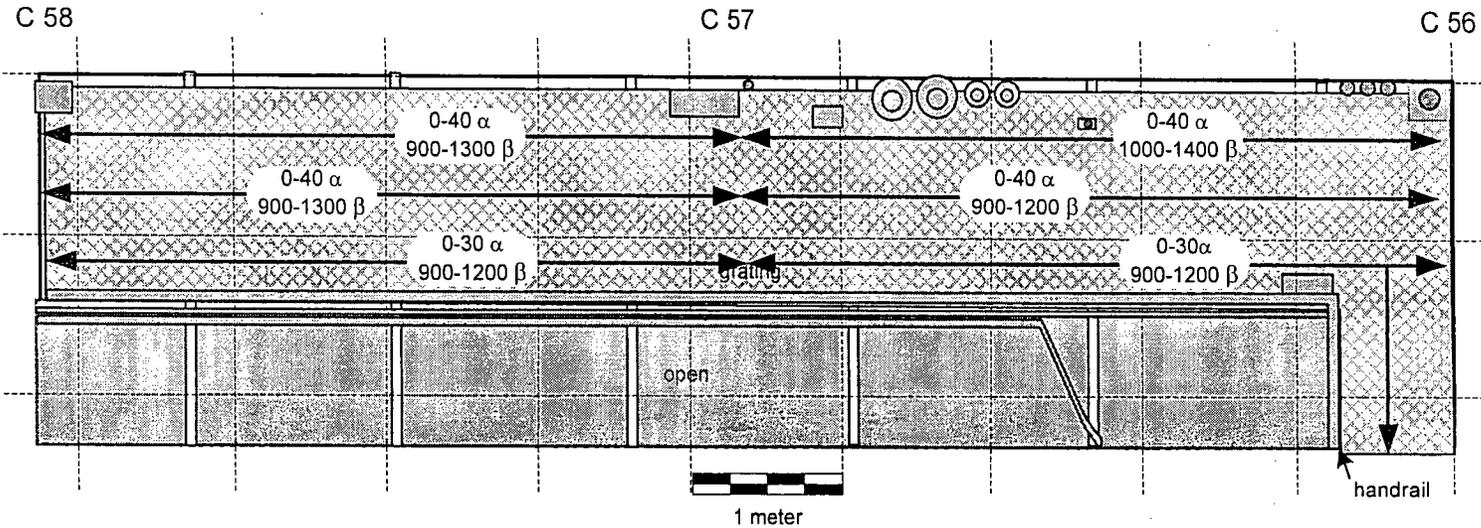
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2. ← ## → Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	01-05-05	01-13-05
Efficiency	22.52%	22.14%
Bkgd cement block	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-12-04

Figure 67: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 56 to C 58  
Alpha and Beta Scan Measurement Locations and Results



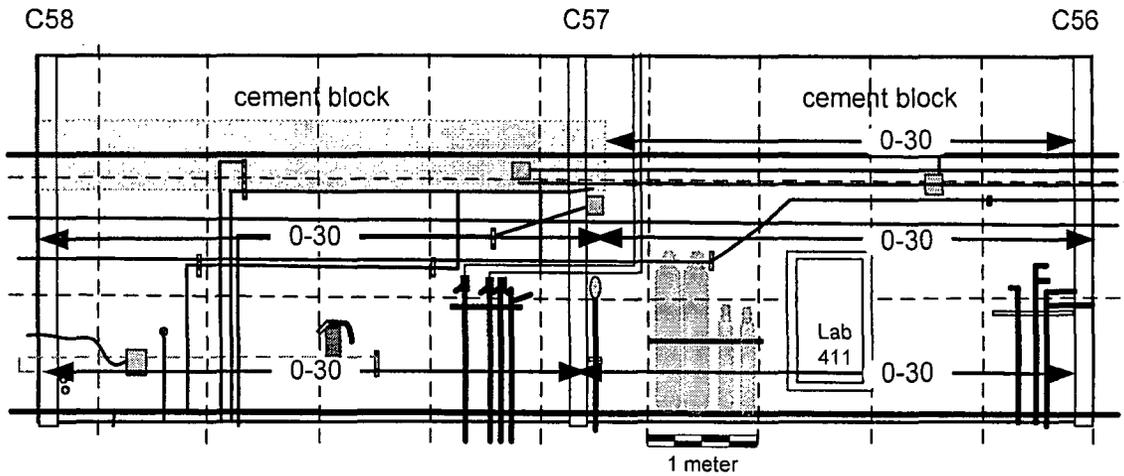
Notes:

1. 100% of accessible surface scanned.
2. ##-## α Denotes alpha scan range in cpm.
3. #####-##### β Denotes beta scan range in cpm.

Instruments		
Model	2221	2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> β	434 cm <sup>2</sup> α
Probe Serial #	149017	086215
Cal Due Date	08-06-04	08-06-04
Efficiency	30.39%	22.14%
Bkgd. metal grating	1000-1400 cpm	0-40 cpm

Surveys conducted by: G. Sayer & R Stowell  
Dates: 02-25-04 & 02-26-04

Figure 68: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 56 to C 58  
Alpha Scan Measurement Locations and Results



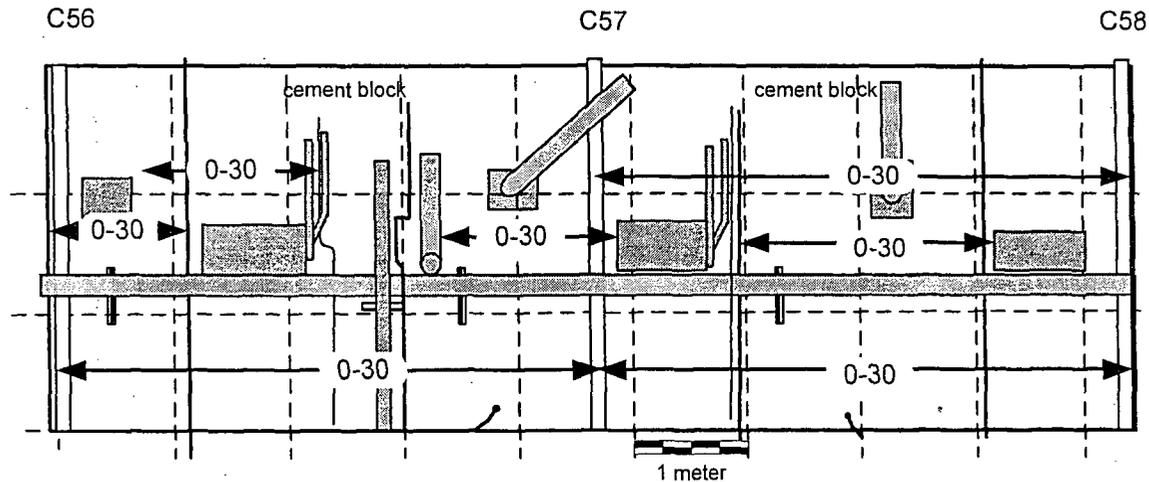
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\longleftrightarrow \#\#\rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	01-05-05	01-13-05
Efficiency	22.52%	22.14%
Bkgd cement block	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-12-04

Figure 69: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 56 to C 58  
Alpha Scan Measurement Locations and Results



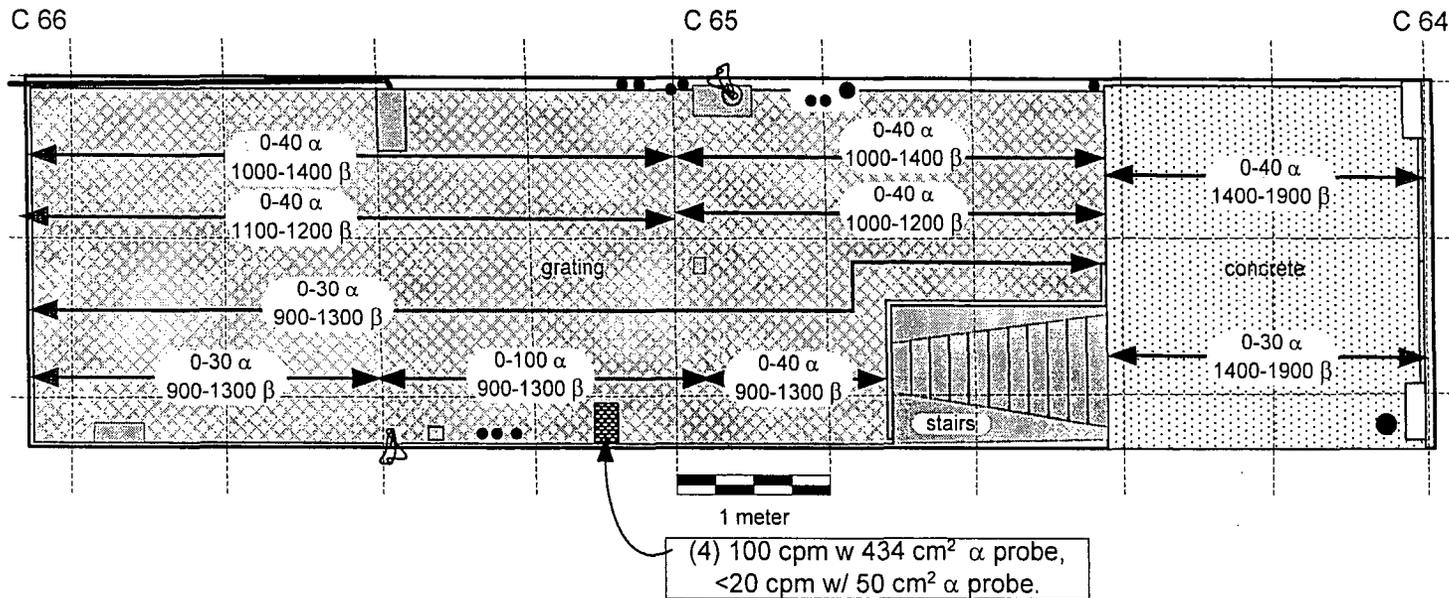
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\# \rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	01-05-05	01-13-05
Efficiency	22.52%	22.14%
Bkgd. cement block	<20 cpm	10-30 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-12-04

Figure 70: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 64 to C 66  
Alpha and Beta Scan Measurement Locations and Results



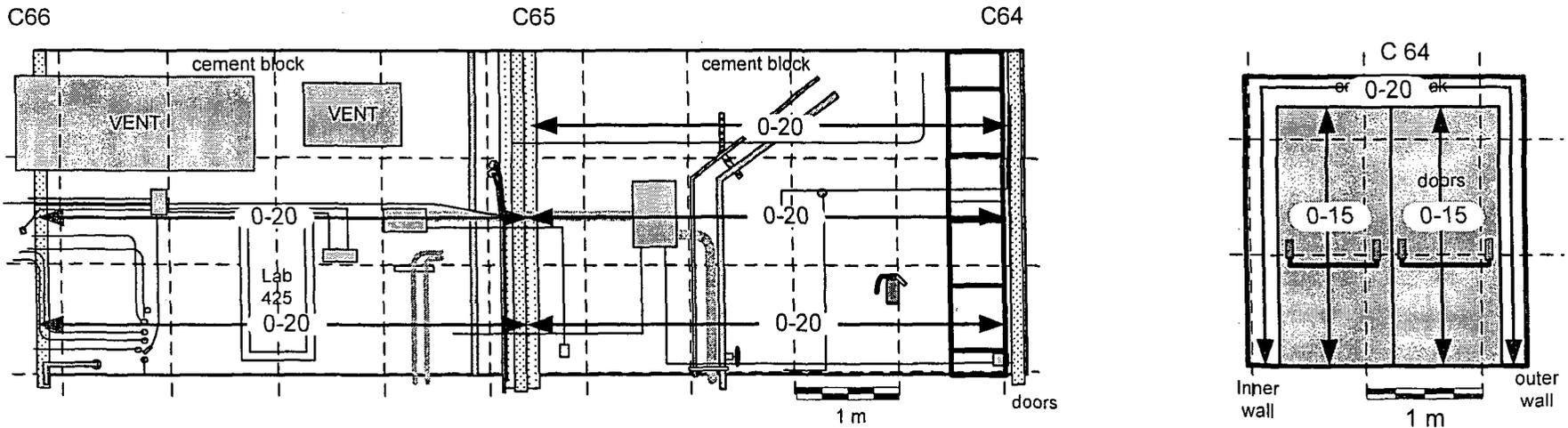
Notes:

1. 100% of accessible surface scanned.
2. ##-## α Denotes alpha scan range in cpm.
3. #####-##### β Denotes beta scan range in cpm.
4.  Denotes location of highest alpha scan, 100 cpm. Checked with 50 cm<sup>2</sup> probe, <20 cpm, <MDA of 209 dpm/100 cm<sup>2</sup>.

Instruments			
Model	2221	2221	Ludlum 12
Serial Number	154202	84459	138801
Probe	434 cm <sup>2</sup> β	434 cm <sup>2</sup> α	50 cm <sup>2</sup> α
Probe Serial #	149017	086215	145696
Cal Due Date	08-06-04	08-06-04	03-11-04
Efficiency	30.39%	22.14%	22.52%
Bkgd. concrete	1300-2000 cpm	10-60 cpm	<20 cpm
Bkgd. metal grating	1000-1400 cpm	0-40 cpm	< 20 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-26-04

Figure 71: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 64 to C 66  
Alpha Scan Measurement Locations and Results



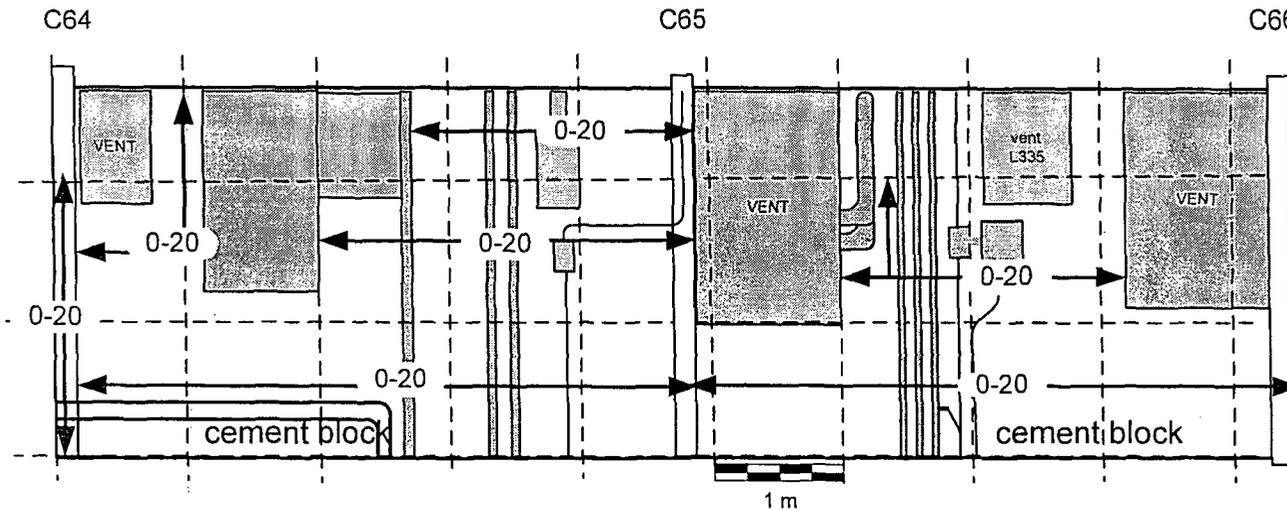
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	01-05-05	01-13-05
Efficiency	22.52%	22.14%
Bkgd: cement block	<20 cpm	10-30 cpm
Bkgd: metal	<20 cpm	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-20-04 & 11-09-04

Figure 72: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 64 to C 66  
Alpha Scan Measurement Locations and Results



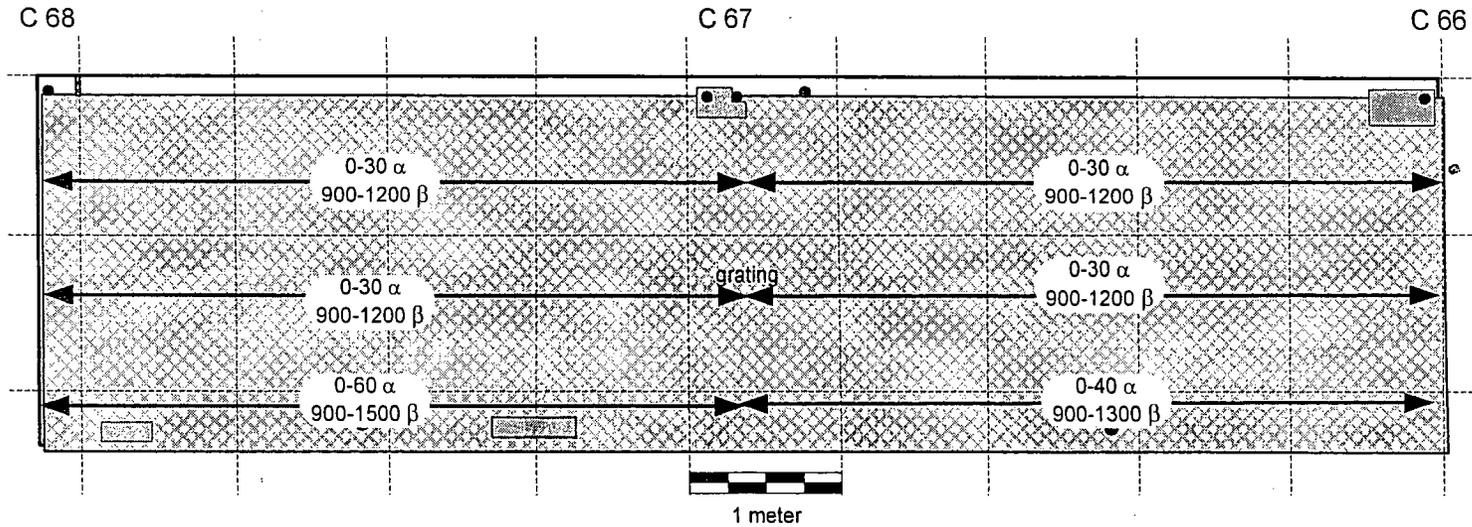
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	01-05-05	01-13-05
Efficiency	22.52%	22.14%
Bkgd: cement block	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-20-04

Figure 73: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 66 to C 68  
Alpha and Beta Scan Measurement Locations and Results



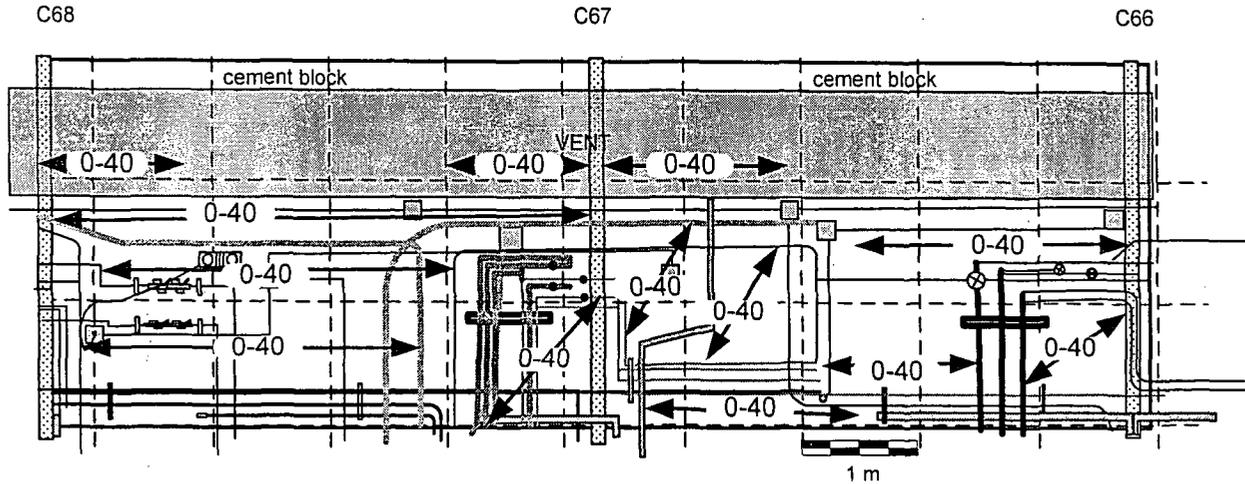
Notes:

1. 100% of accessible surface scanned.
2. ## ##  $\alpha$  Denotes alpha scan range in cpm.
3. ##### #####  $\beta$  Denotes beta scan range in cpm.

Instruments		
Model	Ludlum 2221	Ludlum 2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> $\beta$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	149017	086215
Cal Due Date	08-06-04	08-06-04
Efficiency	30.39%	22.14%
Bkgd. concrete	1300-2000 cpm	10-60 cpm
Bkgd. metal grating	1000-1400 cpm	0-40 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-26-04

Figure 74: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 66 to C 68  
Alpha Scan Measurement Locations and Results



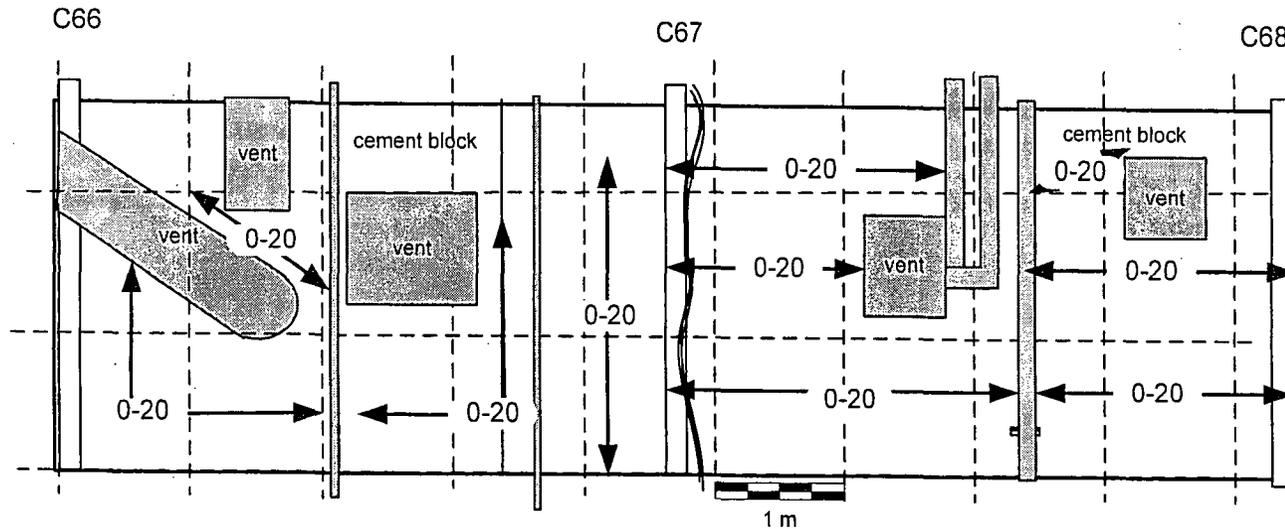
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\# \rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	07-08-05	07-12-05
Efficiency	22.52%	22.14%
Bkgd: cement block	<20 cpm	10-30 cpm
Bkgd: metal	<20 cpm	0-40 cpm

Survey conducted by: R Stowell  
Date: 03-29-05

Figure 75: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 66 to C 68  
Alpha Scan Measurement Locations and Results



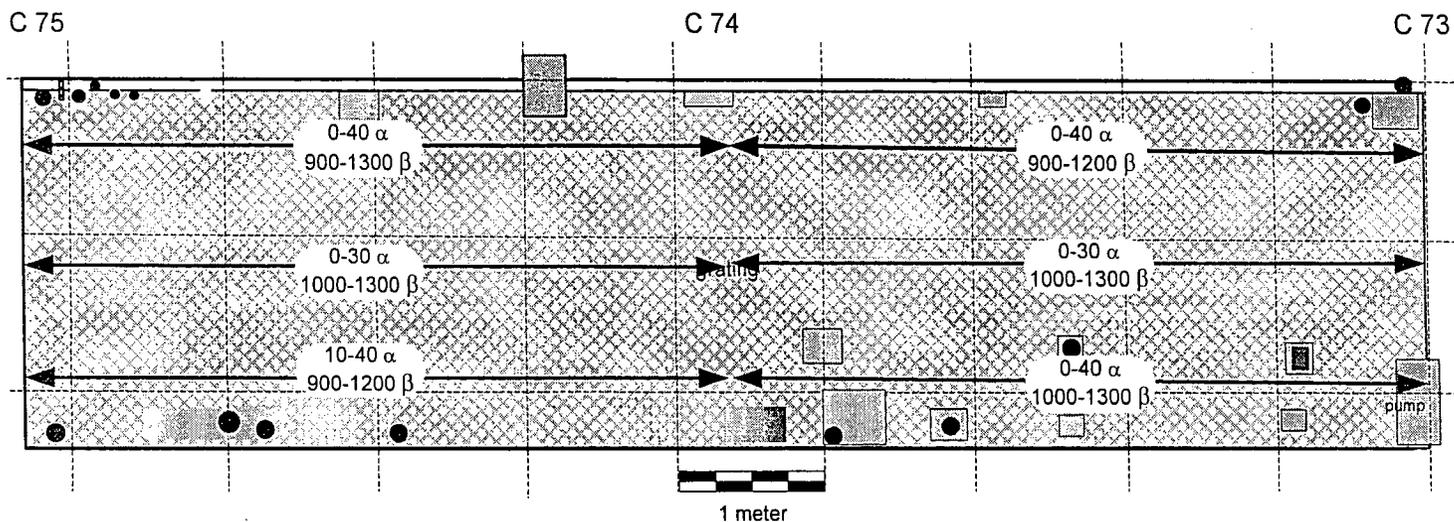
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.

Instrument	
Model	Ludlum 2221
Serial Number	84459
Probe	434 cm <sup>2</sup> $\alpha$
Probe Serial #	086215
Cal Due Date	01-13-05
Efficiency	22.14%
Bkgd cement block	10-30 cpm
Bkgd metal	0-40 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-20-04

Figure 76: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 73 to C 75  
Alpha and Beta Scan Measurement Locations and Results



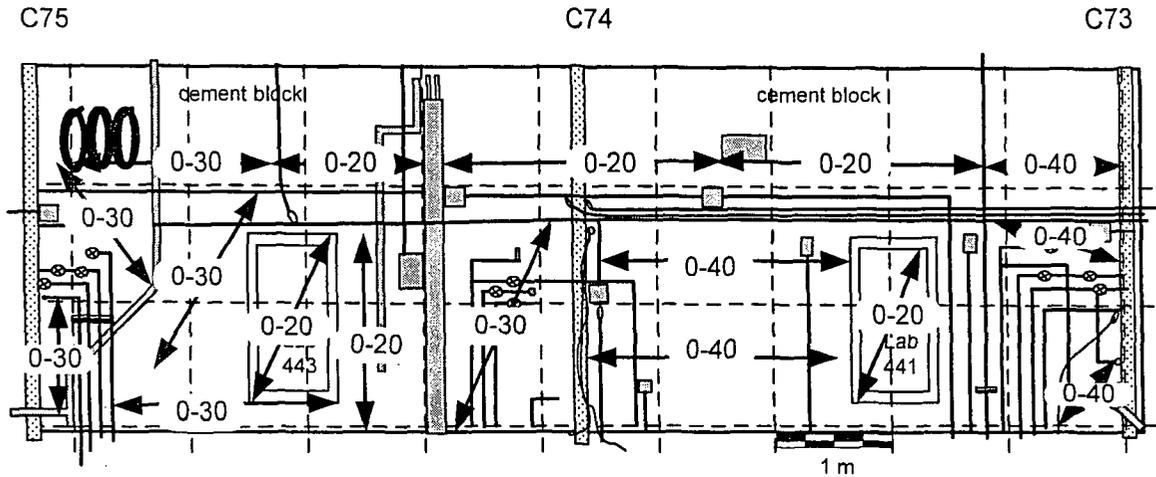
Notes:

1. 100% of accessible surface scanned.
2. ##-##  $\alpha$  Denotes alpha scan range in cpm.
3. ####-####  $\beta$  Denotes beta scan range in cpm.

Instruments		
Model:	Ludlum 2221	Ludlum 2221
Serial Number	154202	84459
Probe	434 cm <sup>2</sup> $\beta$	434 cm <sup>2</sup> $\alpha$
Probe Serial #	149017	086215
Cal Due Date	08-06-04	08-06-04
Efficiency	30.39%	22.14%
Bkgd. concrete	1300-2000 cpm	10-60 cpm
Bkgd. metal grating:	1000-1400 cpm	0-40 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-26-04

Figure 77: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 73 to C 75  
Alpha Scan Measurement Locations and Results



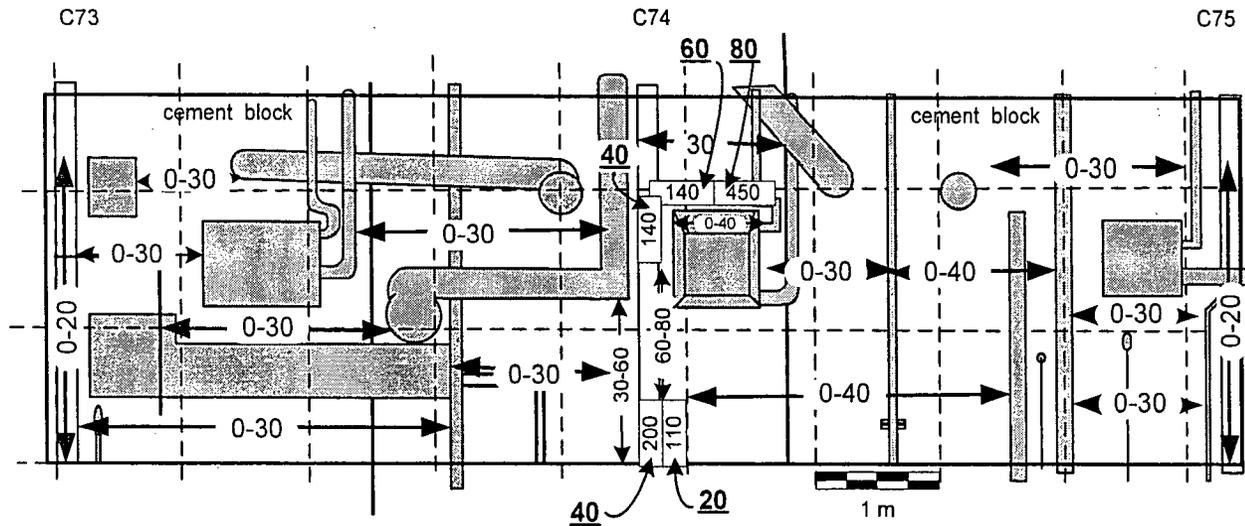
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal Due Date	07-08-05	07-12-05
Efficiency	22.52%	22.14%
Bkgd. cement block	<20 cpm	10-30 cpm
Bkgd. metal	<20 cpm	0-40 cpm

Survey conducted by: R. Stowell  
Date: 03-29-05

Figure 78: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 73 to C 75  
Alpha Scan Measurement Locations and Results



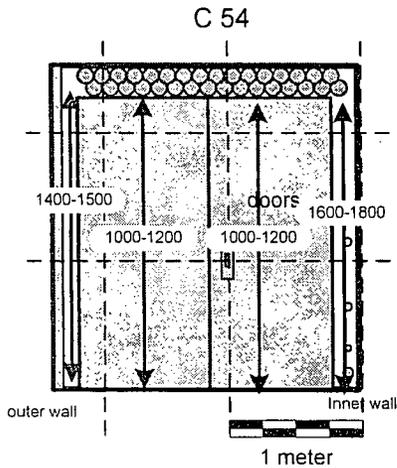
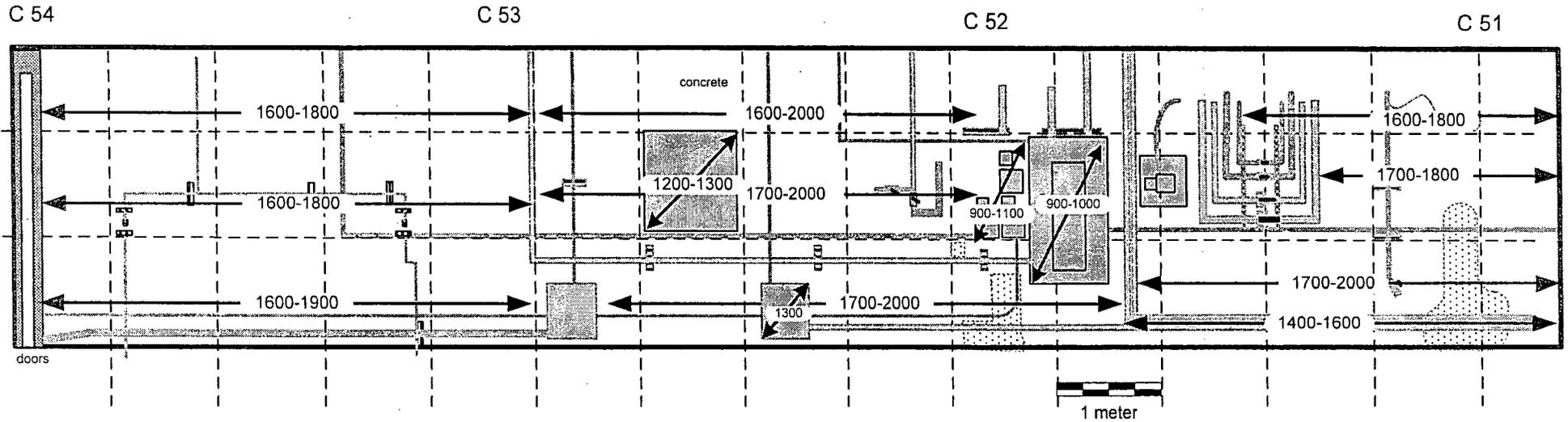
Notes:

1. 100% of accessible area, 2 meters and below, 10% above 2 meters was scanned for alpha.
2.  $\leftarrow \#\#\rightarrow$  Denotes alpha scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Areas not accessible with 434 cm<sup>2</sup> probe were scanned with the 50 cm<sup>2</sup> probe.  
All readings <20 cpm except as noted below.
4.  $\boxed{\#\#\#}$  Denotes elevated scan location, >100 cpm, with 434 cm<sup>2</sup> probe shown in cpm..
5.  $\underline{\#\#}$  Denotes fixed alpha measurement, in cpm, taken with 50 cm<sup>2</sup> probe in elevated scan locations.  
Maximum measurement was 80 cpm, 533 dpm/100 cm<sup>2</sup>. MDA = 209 dpm/100 cm<sup>2</sup>.

Instruments		
Model	Ludlum 12	Ludlum 2221
Serial Number	138801	84459
Probe	50 cm <sup>2</sup> α	434 cm <sup>2</sup> α
Probe Serial #	145696	086215
Cal-Due Date	07-08-05	07-12-05
Efficiency	22.52%	22.14%
Bkgd cement block	<20 cpm	10-30 cpm
Bkgd metal	<20 cpm	0-40 cpm

Survey conducted by: R Stowell  
Date: 03-29-05

Figure 79: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 51 to C 54  
Beta Scan Measurement Locations and Results

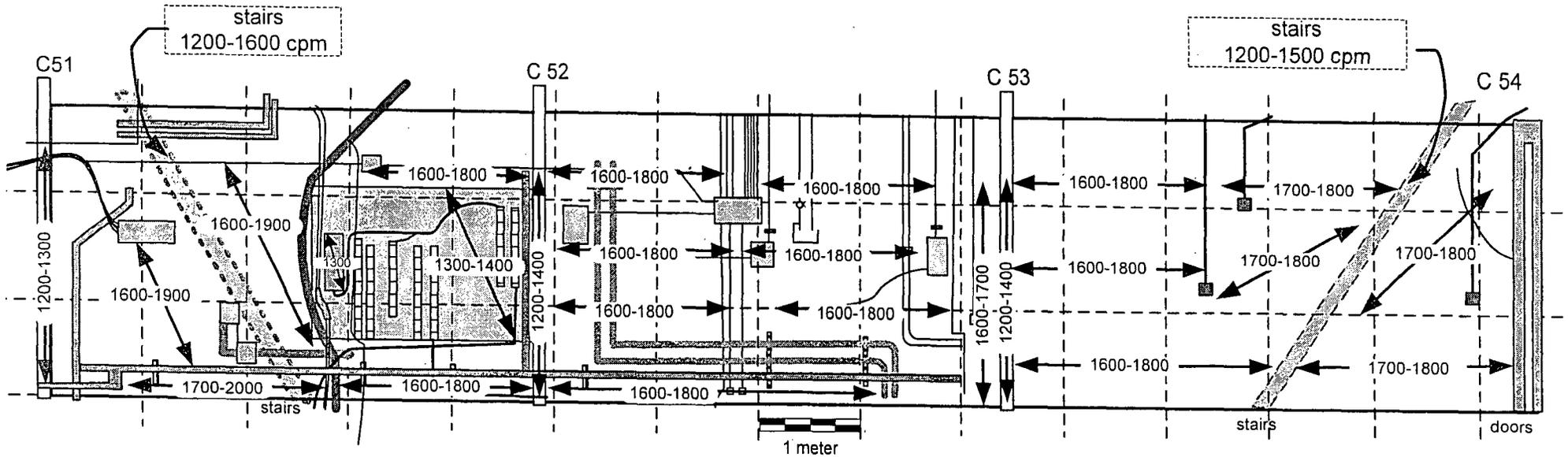


- Notes:
- 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
  - ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
  - Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 320-500 cpm.
  - Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 02-09-04 & 02-10-04

Figure 80: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 51 to C 54  
Beta Scan Measurement Locations and Results



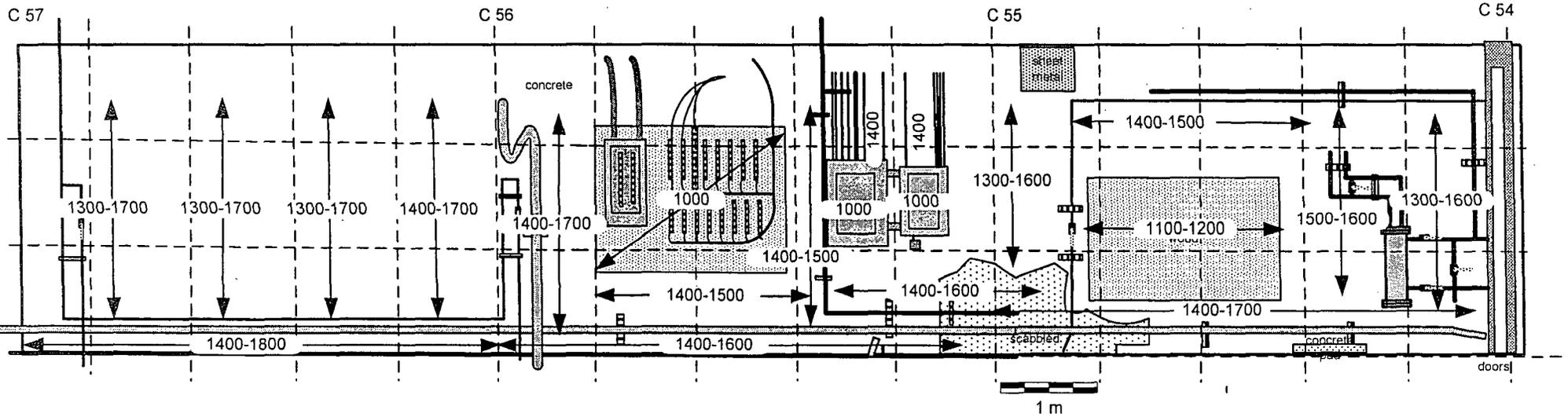
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2.  $\leftarrow \#\# \rightarrow$  Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 300-500 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> $\beta$	100 cm <sup>2</sup> $\beta$	15 cm <sup>2</sup> $\beta$ - $\gamma$
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & R. Stowell  
Date: 02-10-04

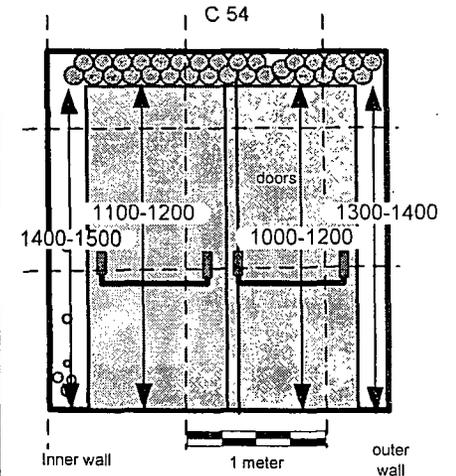
Figure 81: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 54 to C 57  
Beta Scan Measurement Locations and Results



Notes:

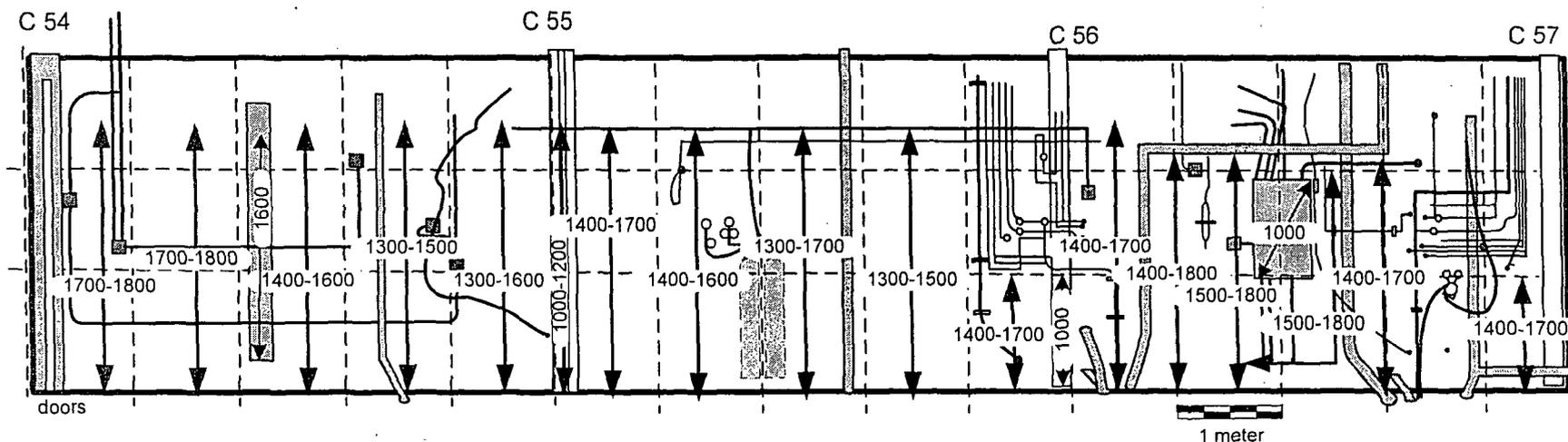
- 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
- ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
- Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 320-500 cpm.
- Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal. Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm



Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-10-04

Figure 82: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 54 to C 57  
Beta Scan Measurement Locations and Results



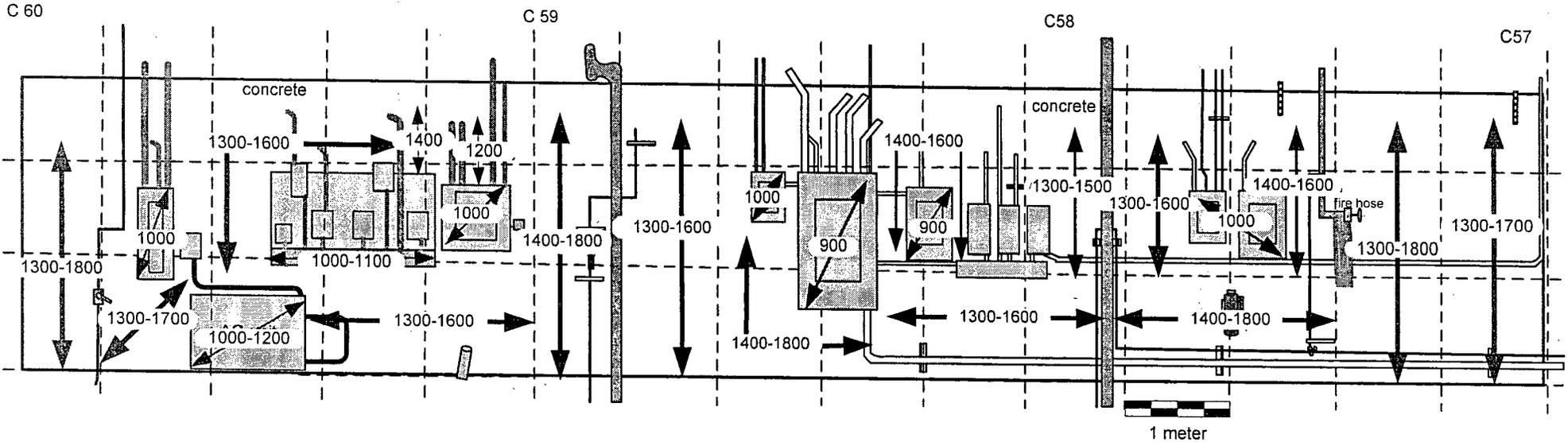
Notes:

- 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
- ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
- Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 350-440 cpm.
- Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number:	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #:	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: R. Stowell & G. Sayer  
Date: 02-10-04

Figure 83: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 57 to C 60  
Beta Scan Measurement Locations and Results



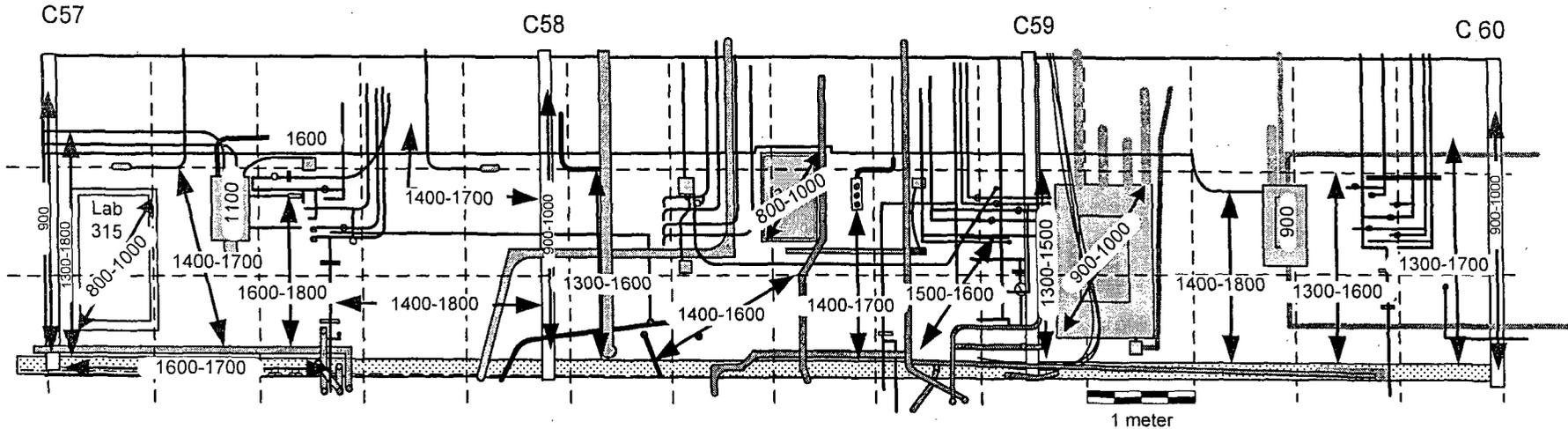
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe.  
All readings 360-440 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe.  
All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-10-04

Figure 84: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 57 to C 60  
Beta Scan Measurement Locations and Results



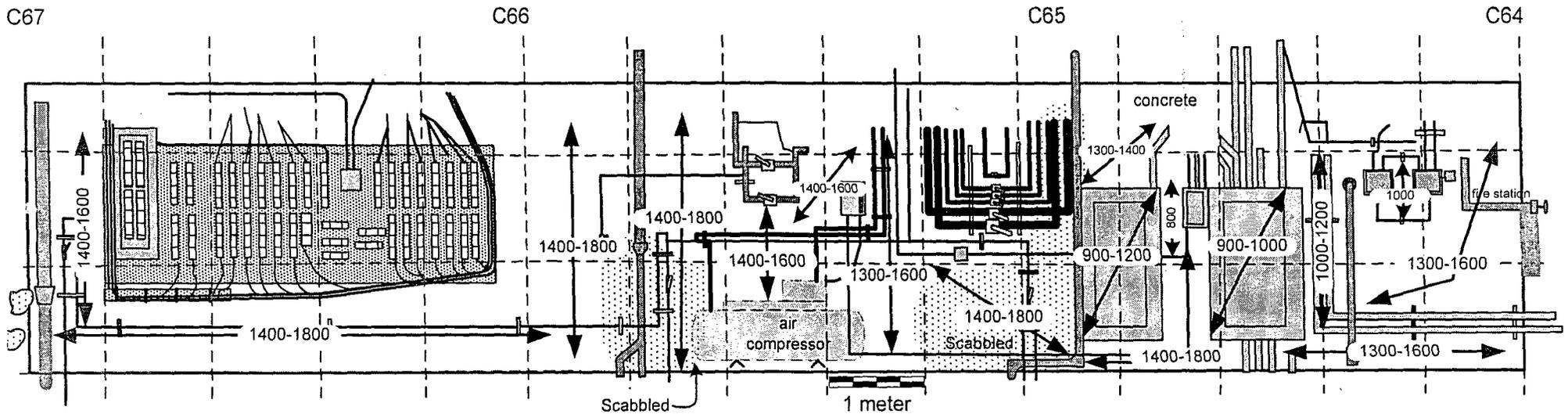
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe.  
All readings 320-440 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe.  
All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & R. Stowell  
Date: 02-10-04

Figure 85: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 64 to C 67  
Beta Scan Measurement Locations and Results



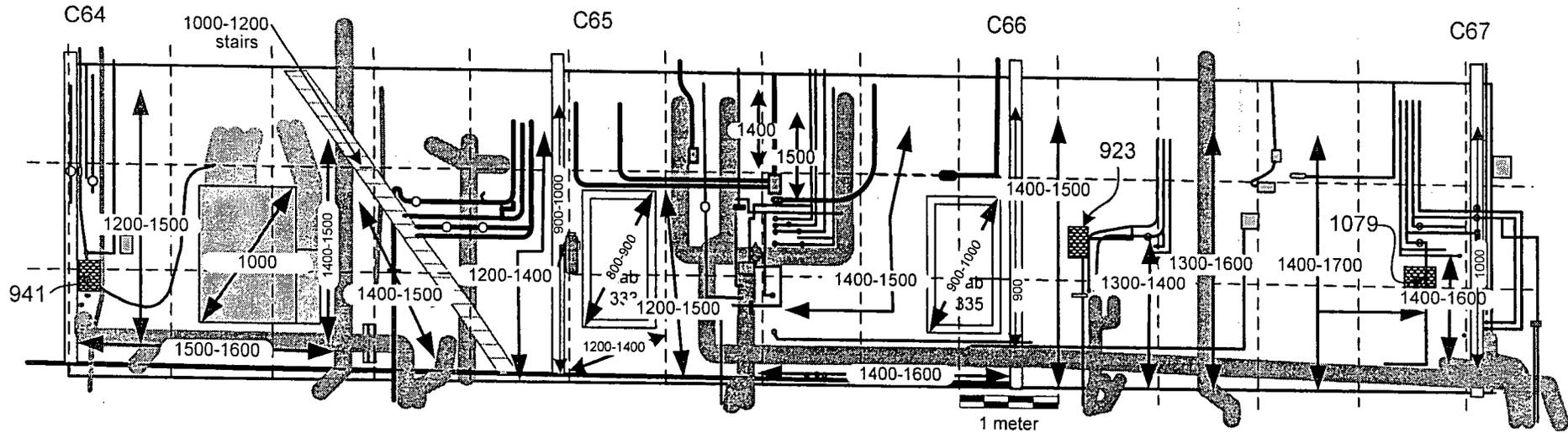
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe.  
All readings 260 -500 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe.  
All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-12-04

Figure 86: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 64 to C 67  
Beta Scan Measurement Locations and Results



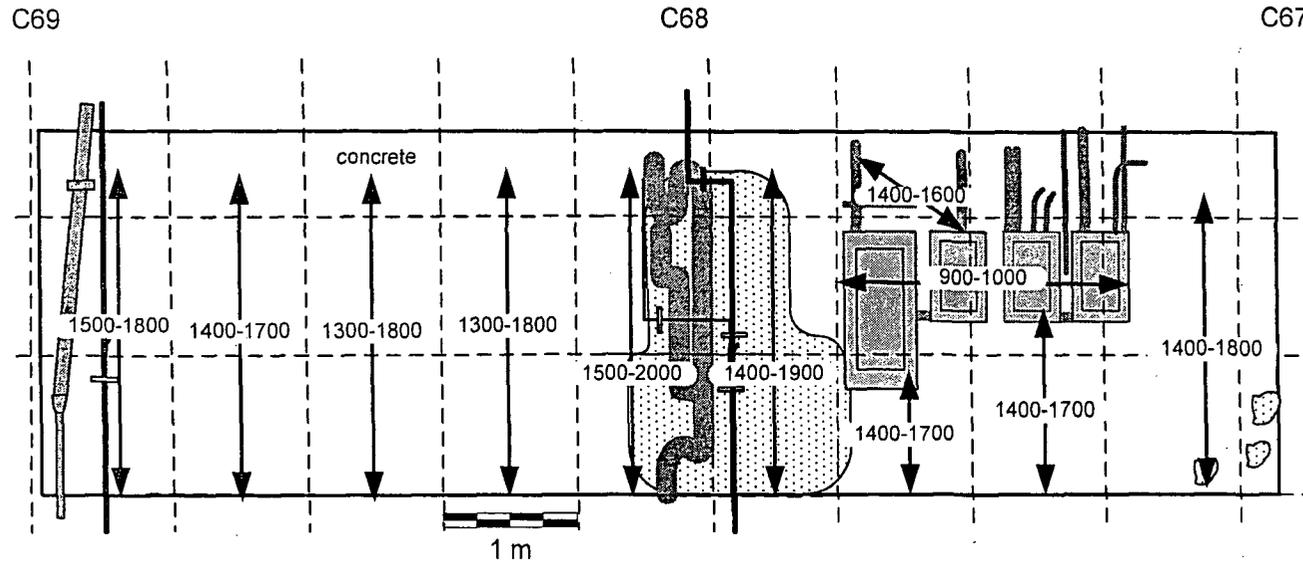
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2.  $\leftarrow ## \rightarrow$  Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 320-550 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.
5.  $\leftarrow ###$  Denotes two minute fixed beta measurement, in cp2m, taken at 100 cm<sup>2</sup> probe elevated scan sites. Maximum measurement was 1079 cp2m, 654 dpm/ 100 cm<sup>2</sup>.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> $\beta$	100 cm <sup>2</sup> $\beta$	15 cm <sup>2</sup> $\beta$ - $\gamma$
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm
Cement Block Fixed Meas.	_____	843 $\pm$ 120cp2m	_____

Survey conducted by: G. Sayer & R. Stowell  
Date: 02-11-04 & 02-12-04

Figure 87: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 67 to C 69  
Beta Scan Measurement Locations and Results



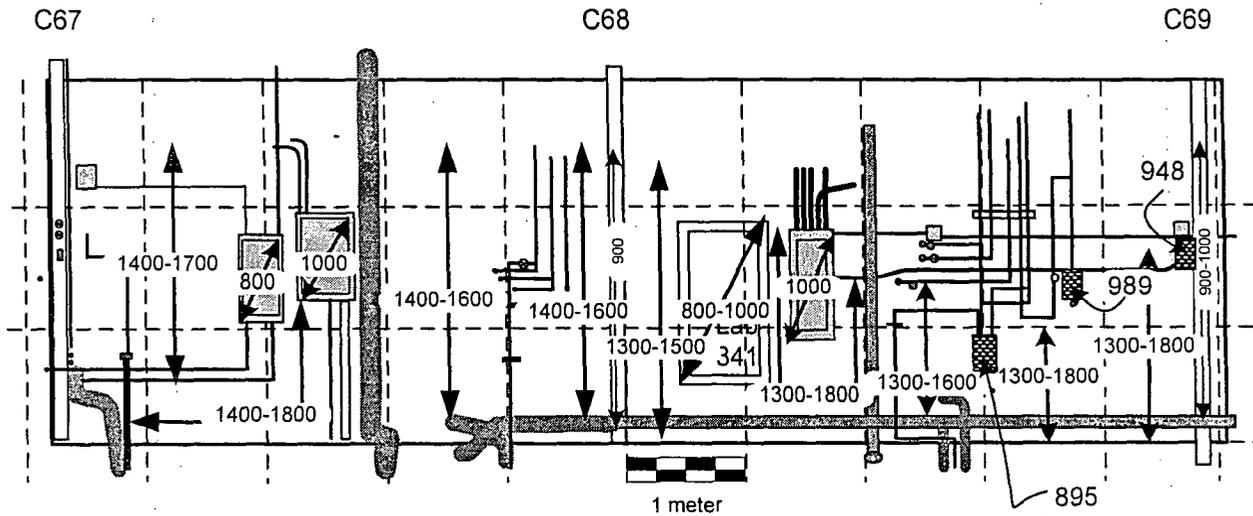
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 260-460 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-12-04

Figure 88: Building 2 Service Corridor First (Lowest) Level Outer Wall Column C 67 to C 69  
Beta Scan Measurement Locations and Results



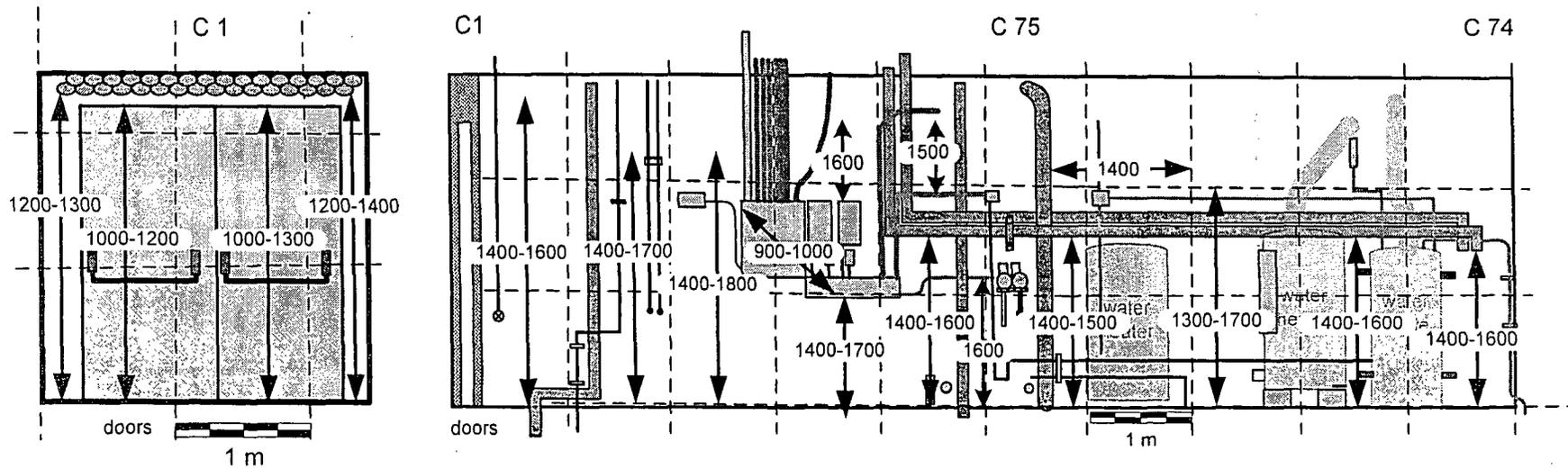
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 320-500 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.
5.  Denotes two minute fixed beta measurement, in cp2m, taken at 100 cm<sup>2</sup> probe elevated scan sites. Maximum measurement was 989 cp2m, 510 dpm/ 100 cm<sup>2</sup>. Background for cement block 671 cp2m.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & R. Stowell  
Date: 02-12-04

Figure 89: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 74 to C 1  
Beta Scan Measurement Locations and Results



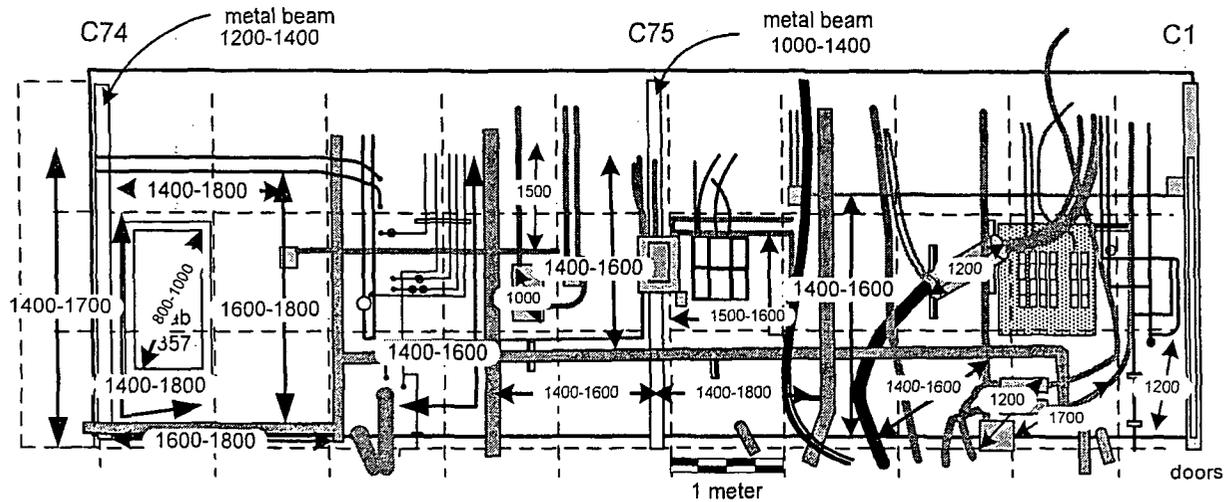
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 240-380 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & R. Stowell  
Date: 02-12-04

Figure 90: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 74 to C 1  
Beta Scan Measurement Locations and Results



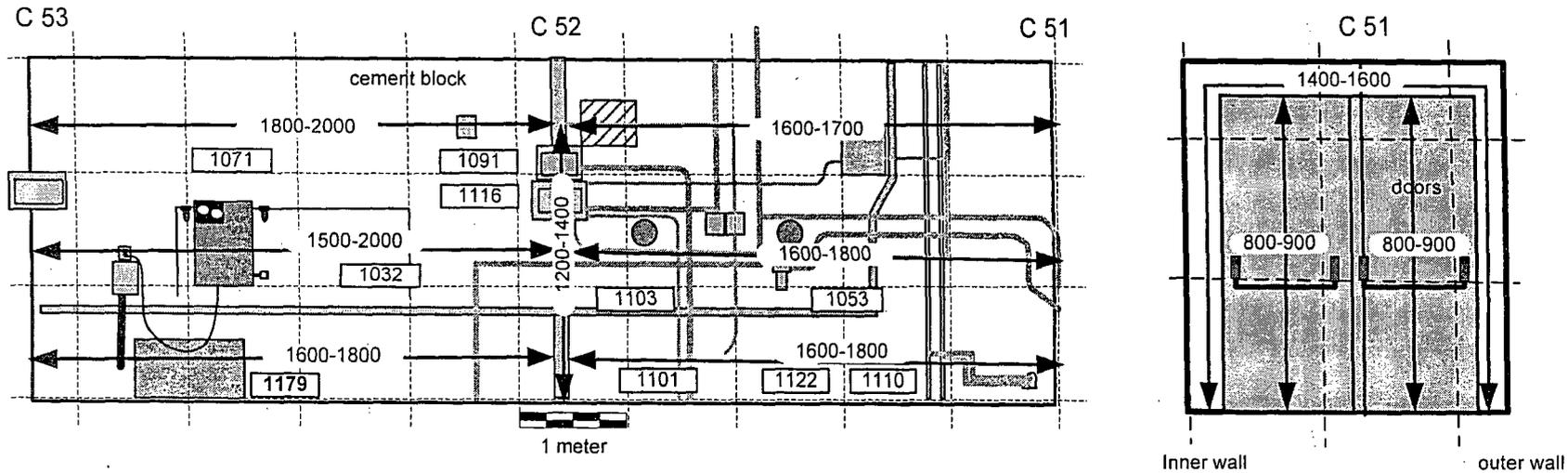
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe.  
All readings 240-380 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe.  
All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	08-06-04	05-04-04	05-10-04
Efficiency	30.39%	31.20%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & R. Stowell  
Date: 02-12-04 & 02-17-04

Figure 91: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 51 to C 53  
Beta Scan Measurement Locations and Results



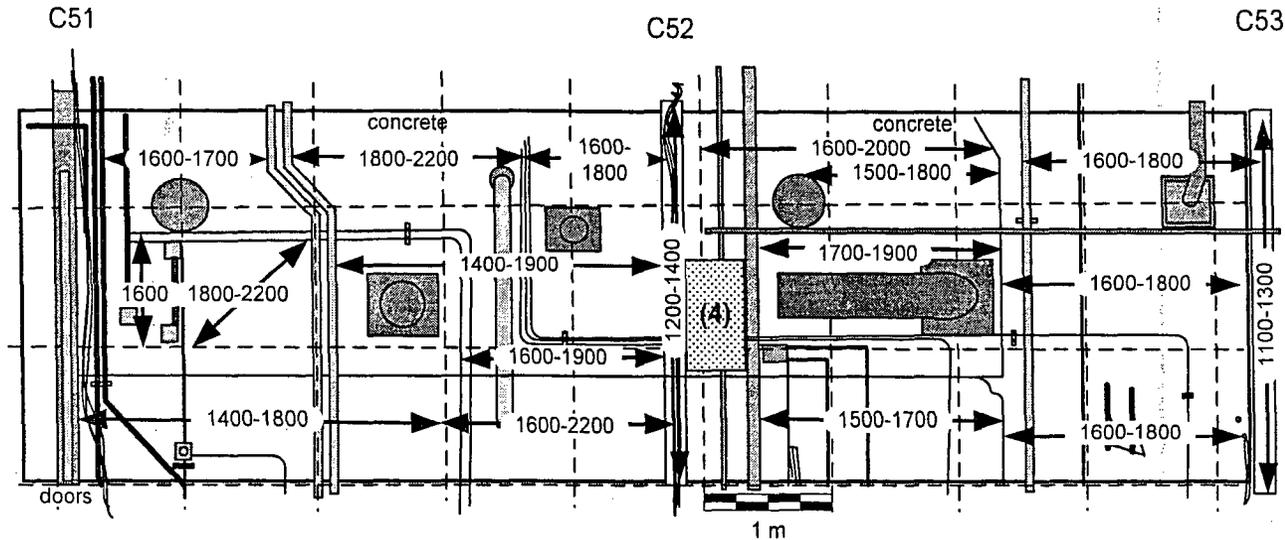
Notes:

- 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
- ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
- Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 200-550 cpm.
- Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-120 cpm.
- #### Denotes 2 minute fixed beta measurement in cp2m, taken at elevated scan locations. Maximum result was 1179 cp2m, 489 dpm/100 cm<sup>2</sup>.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	01-28-05	01-13-05	01-28-05
Efficiency	30.39%	34.36%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem blk	1300-1500 cpm	220-340 cpm	50-80 cpm
Cem Block Fixed Meas.	-----	843±120 cp2m	-----

Survey conducted by: G. Sayer & D. Dove  
Dates: 10-11-04 & 10-12-04

Figure 92: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 51 to C 53  
Beta Scan Measurement Locations and Results



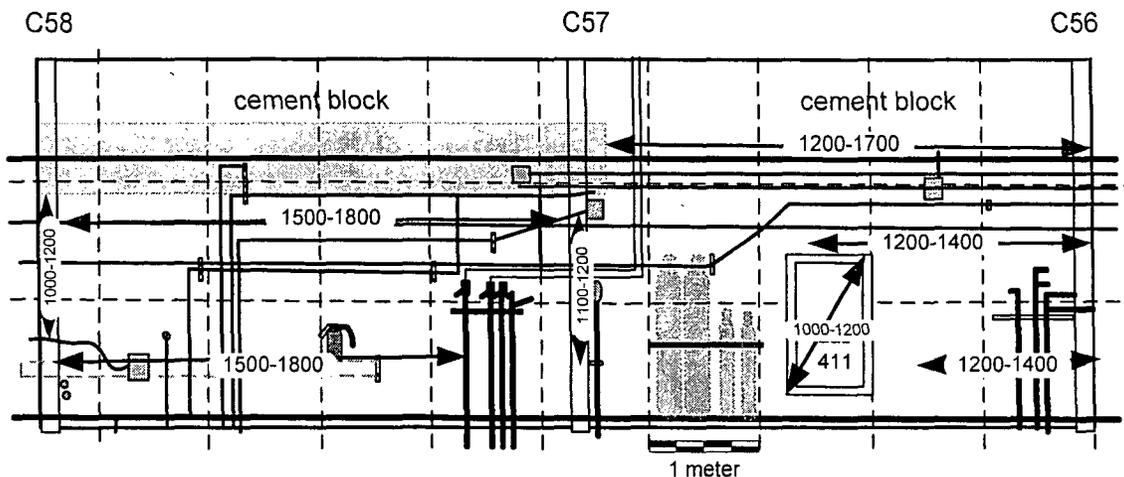
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2.  $\leftarrow \#\# \rightarrow$  Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings < background except as noted below.
4.  Denotes area with elevated scans using 100 cm<sup>2</sup> probe. Seven, 2-minute, fixed measurements were taken in this area. Maximum reading was 1037 cp2m, < MDA of 212 dpm/100 cm<sup>2</sup>.
5. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-80 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> $\beta$	100 cm <sup>2</sup> $\beta$	15 cm <sup>2</sup> $\beta$ - $\gamma$
Probe Serial #	149017	142547	117851
Cal Due Date	01-28-05	01-13-05	01-28-05
Efficiency	30.39%	34.36%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. concrete fixed measurement	-----	948 $\pm$ 256 cp2m MDA 212 dpm/ 100 cm <sup>2</sup>	-----

Survey conducted by: G. Sayer & D. Dove  
Date: 10-13-04 & 10-21-04

Figure 93: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 56 to C 58  
Beta Scan Measurement Locations and Results



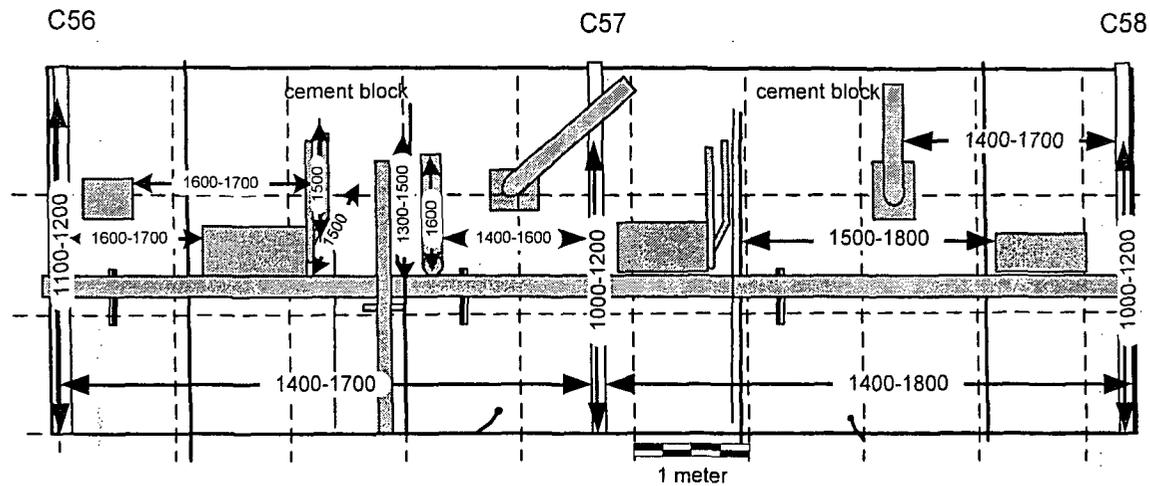
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan range in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 340-500 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-120 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal Due Date	01-28-05	01-13-05	01-28-05
Efficiency	30.39%	34.36%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-11-04 & 10-12-04

Figure 94: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 56 to C 58  
Beta Scan Measurement Locations and Results



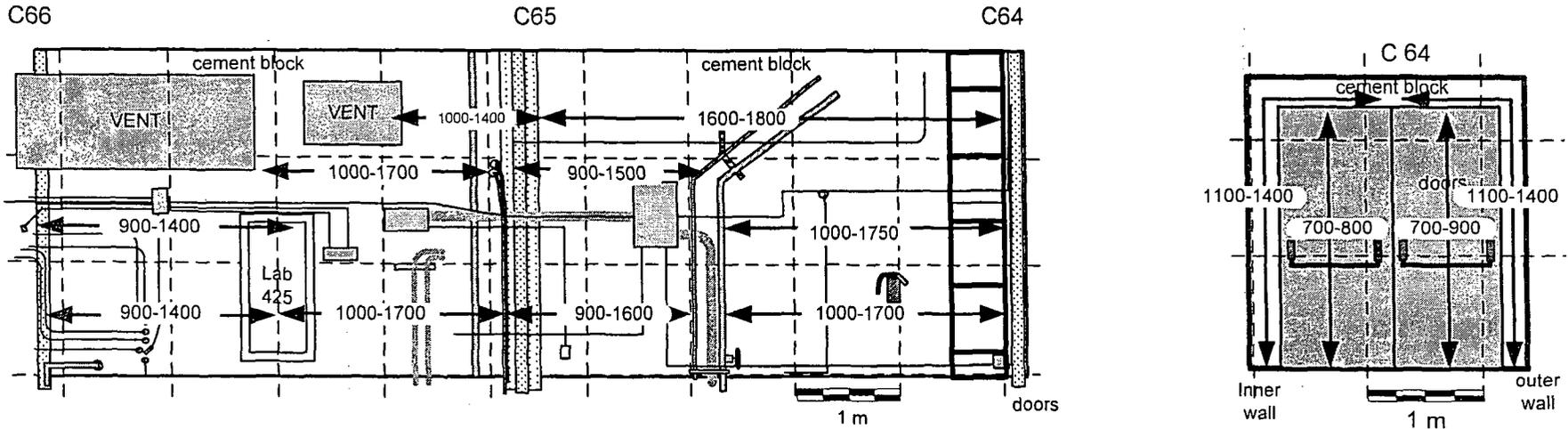
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.

Instrument	
Model	Ludlum 2221
Serial Number	154202
Probe	434 cm <sup>2</sup> β
Probe Serial #	149017
Cal Due Date	01-28-05
Efficiency	30.39%
Bkgd. metal	700-1300 cpm
Bkgd. cem blk	1300-1500 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-13-04

Figure 95: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 64 to C 66  
Beta Scan Measurement Locations and Results



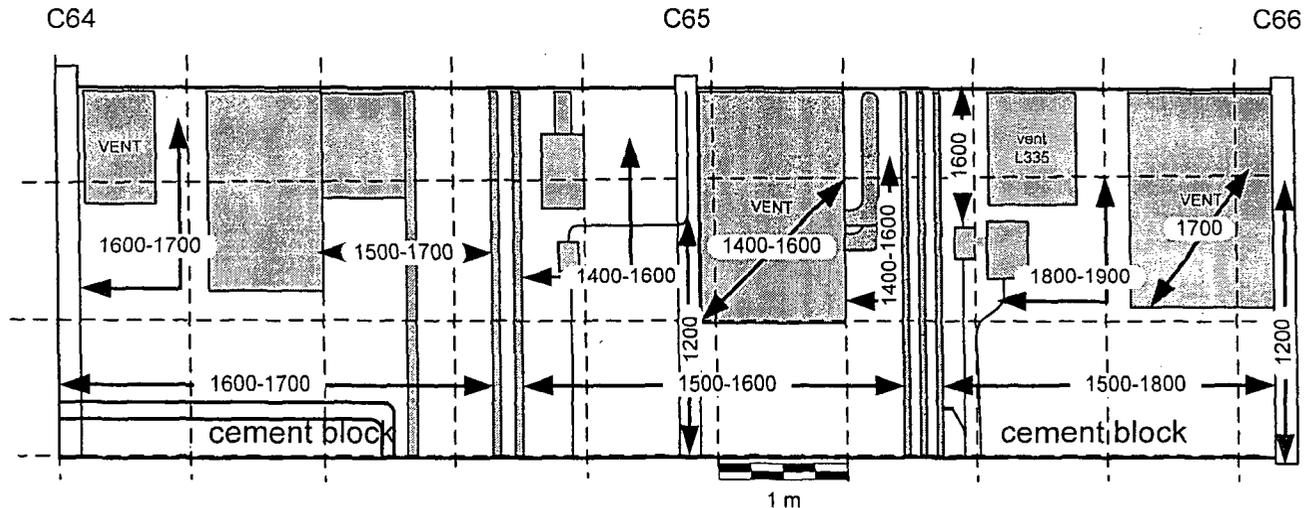
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 300-400 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model:	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number:	154202	86302	138880
Probe:	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #:	149017	142547	117851
Cal Due Date:	01-28-05	01-13-05	01-28-05
Efficiency:	30.39%	34.36%	26.14%
Bkgd. concrete:	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood:	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal:	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk:	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & D. Dove  
Dates: 10-18-04, 10-22-04 & 11-09-04

Figure 96: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 64 to C 66  
Beta Scan Measurement Locations and Results



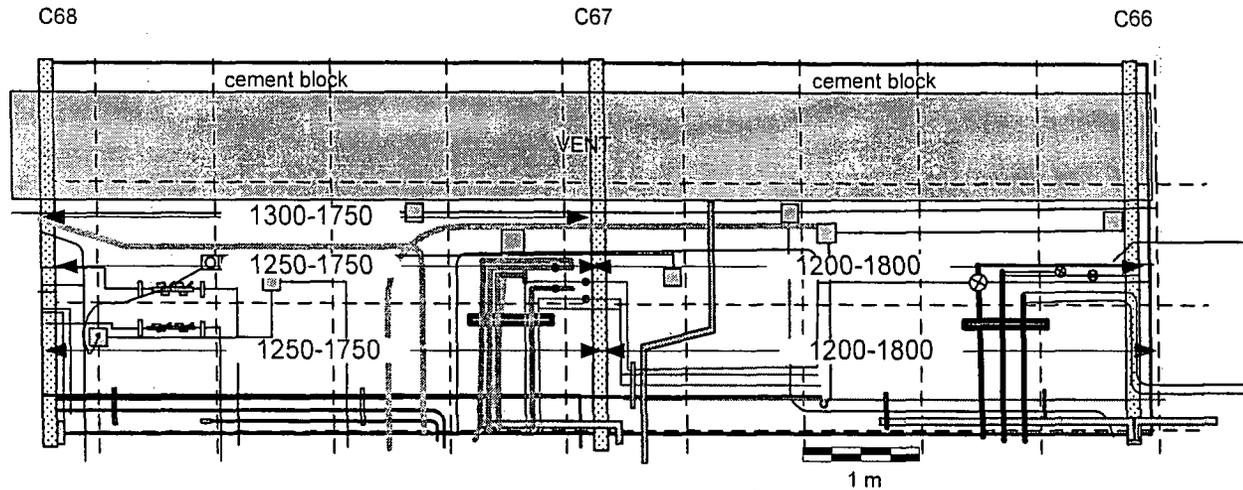
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2.  $\leftarrow \#\# \rightarrow$  Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 300-400 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 60-80 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> $\beta$	100 cm <sup>2</sup> $\beta$	15 cm <sup>2</sup> $\beta$ - $\gamma$
Probe Serial #	149017	142547	117851
Cal Due Date	01-28-05	01-13-05	01-28-05
Efficiency	30.39%	34.36%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-20-04

Figure 97: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 66 to C 68  
Beta Scan Measurement Locations and Results



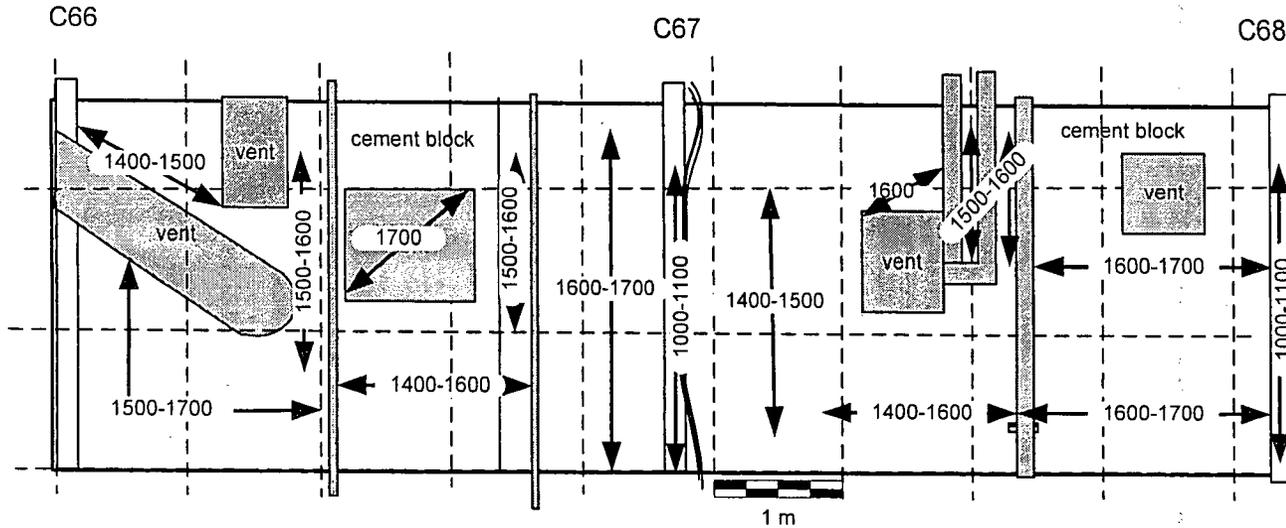
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe.  
All readings 300-400 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe.  
All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β	15 cm <sup>2</sup> β-γ
Probe Serial #	149017	142547	117851
Cal. Due Date	01-28-05	01-13-05	01-28-05
Efficiency	30.39%	34.36%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: D. Dove  
Date: 10-16-04

Figure 98: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 66 to C 68  
Beta Scan Measurement Locations and Results



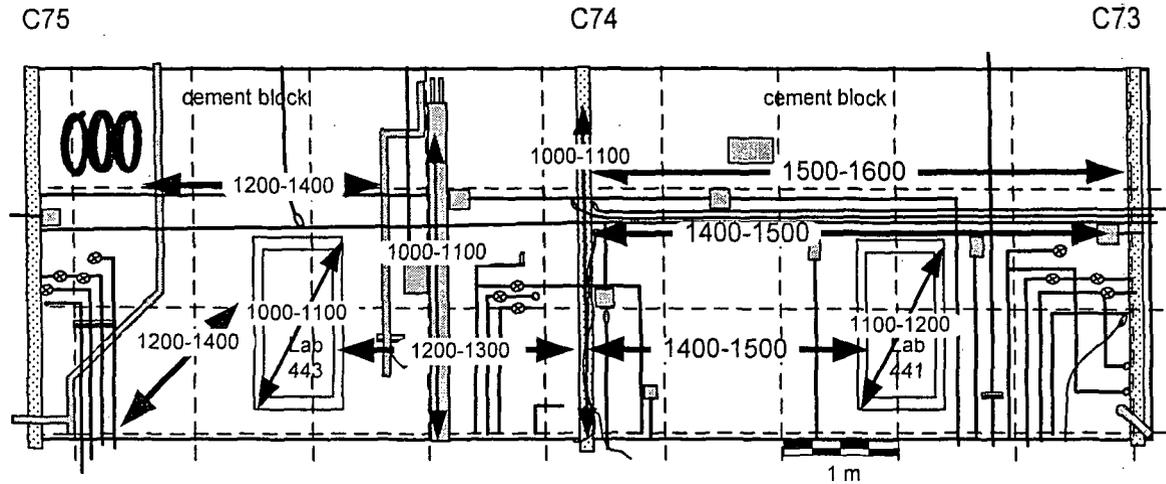
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.

Instrument	
Model	Ludlum 2221
Serial Number	154202
Probe	434 cm <sup>2</sup> β
Probe Serial #	149017
Cal Due Date	01-28-05
Efficiency	30.39%
Bkgd. concrete	1300-2000 cpm
Bkgd. wood	900-1400 cpm
Bkgd. metal	700-1300 cpm
Bkgd. cem. blk	1300-1500 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-20-04

Figure 99: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 73 to C 75  
Beta Scan Measurement Locations and Results



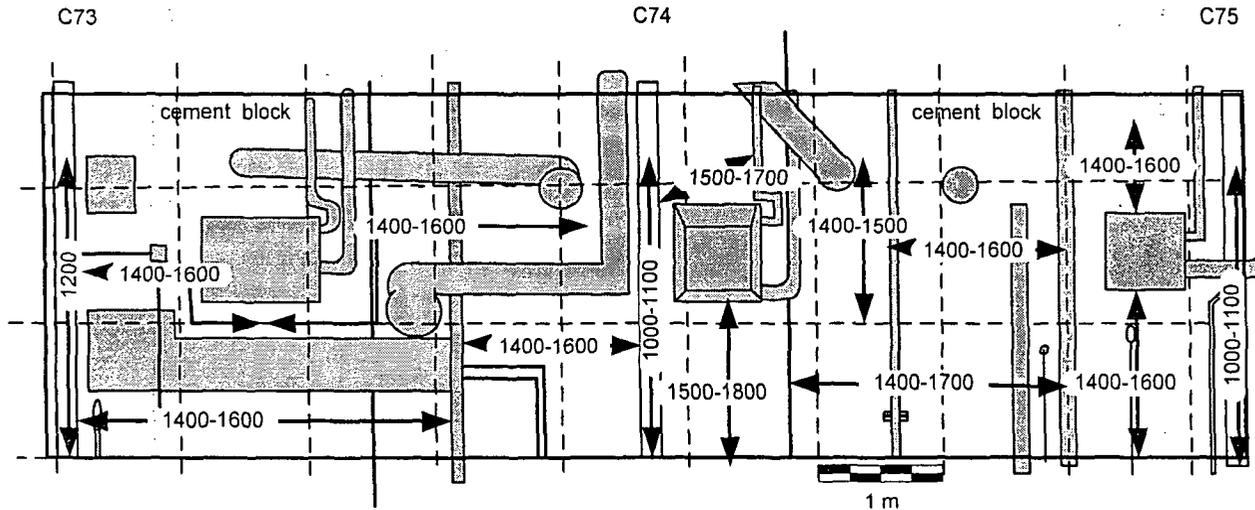
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2.  $\leftarrow \# \# \rightarrow$  Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe. All readings 300-400 cpm.
4. Surfaces not accessible with 100 cm<sup>2</sup> probe were scanned with 15 cm<sup>2</sup> probe. All readings 40-100 cpm.

Instruments			
Model	Ludlum 2221	Ludlum 2221	Ludlum 3
Serial Number	154202	86302	138880
Probe	434 cm <sup>2</sup> $\beta$	100 cm <sup>2</sup> $\beta$	15 cm <sup>2</sup> $\beta$ - $\gamma$
Probe Serial #	149017	142547	117851
Cal Due Date	01-28-05	01-13-05	01-28-05
Efficiency	30.39%	34.36%	26.14%
Bkgd. concrete	1300-2000 cpm	320-420 cpm	60-80 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm	40-100 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm	40-70 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm	50-80 cpm

Survey conducted by: G. Sayer & D. Dove  
Dates: 10-21-04 & 10-25-04

Figure 100: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 73 to C 75  
Beta Scan Measurement Locations and Results



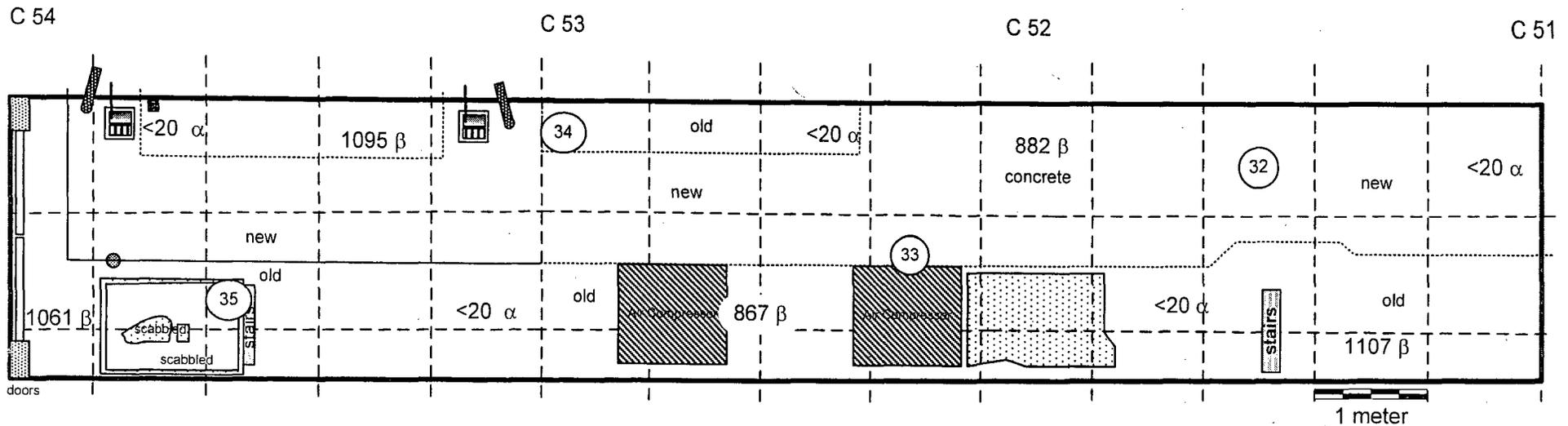
Notes:

1. 100% of accessible surface scanned 2 meters and below, 10% above 2 meters.
2. ← ## → Denotes beta scan in cpm as measured with the 434 cm<sup>2</sup> probe.
3. Surfaces not accessible with 434 cm<sup>2</sup> probe were scanned with 100 cm<sup>2</sup> probe.  
All readings 300-400 cpm.

Instruments		
Model	Ludlum 2221	Ludlum 2221
Serial Number	154202	86302
Probe	434 cm <sup>2</sup> β	100 cm <sup>2</sup> β
Probe Serial#	149017	142547
Cal Due Date	01-28-05	01-13-05
Efficiency	30.39%	34.36%
Bkgd. concrete	1300-2000 cpm	320-420 cpm
Bkgd. wood	900-1400 cpm	220-380 cpm
Bkgd. metal	700-1300 cpm	180-280 cpm
Bkgd. cem. blk	1300-1500 cpm	220-340 cpm

Survey conducted by: G. Sayer & D. Dove  
Date: 10-21-04

Figure 101: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 51 to C 54  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



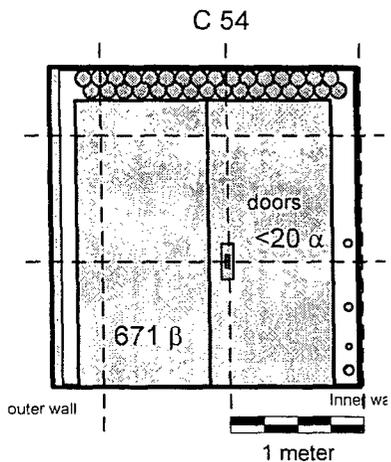
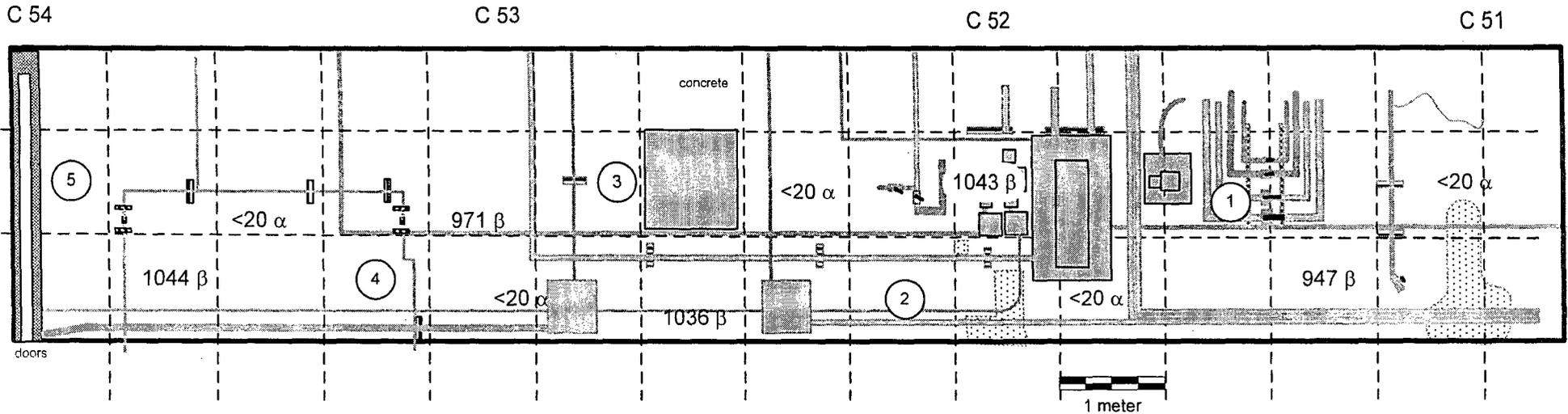
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math>< 20</math> cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1107 cp2m, 231 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math>< 20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-17-04 & 02-23-04

Figure 102: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 51 to C 54  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



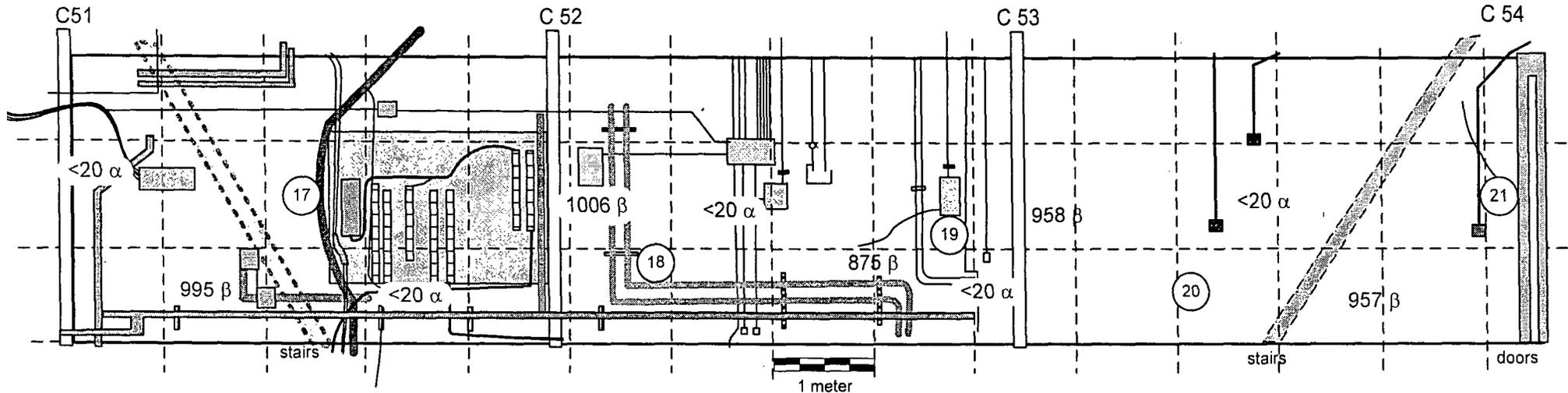
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20 \text{ cpm}</math>.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1044 cp2m, <math>< \text{MDA of } 212 \text{ dpm}/100 \text{ cm}^2</math>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20 \text{ cpm}</math>
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math><20 \text{ cpm}</math>
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-17-04 & 02-23-04

Figure 103: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 51 to C 54  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



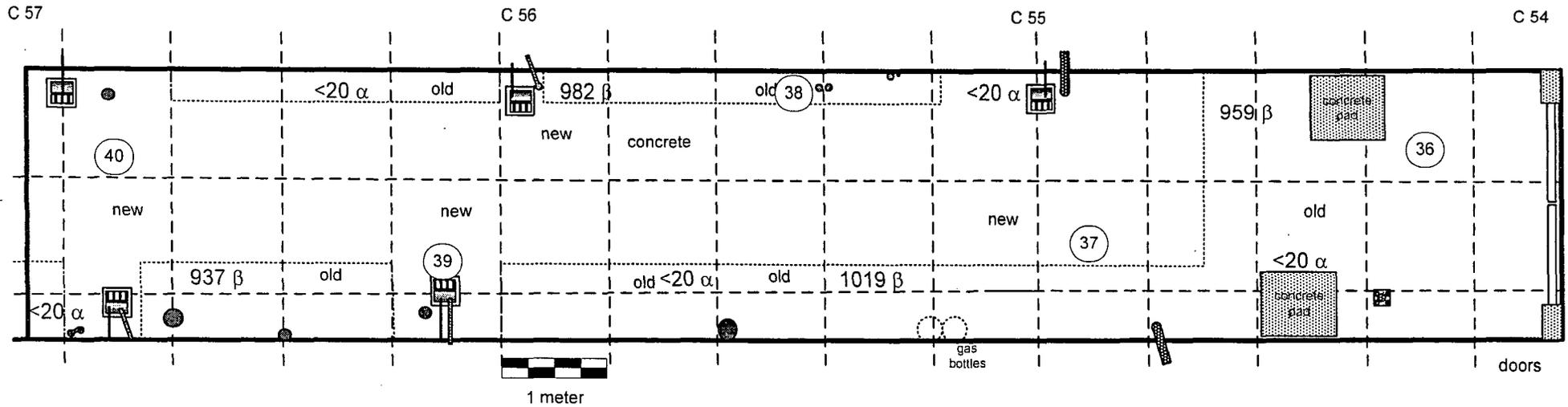
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20</math> cpm.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1006 cp2m, 237 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd cement blk	843 $\pm$ 120 cp2m	<math><20</math> cpm
MDA cement blk	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math><20</math> cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-17-04 & 02-23-04

Figure 104: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 54 to C 57  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



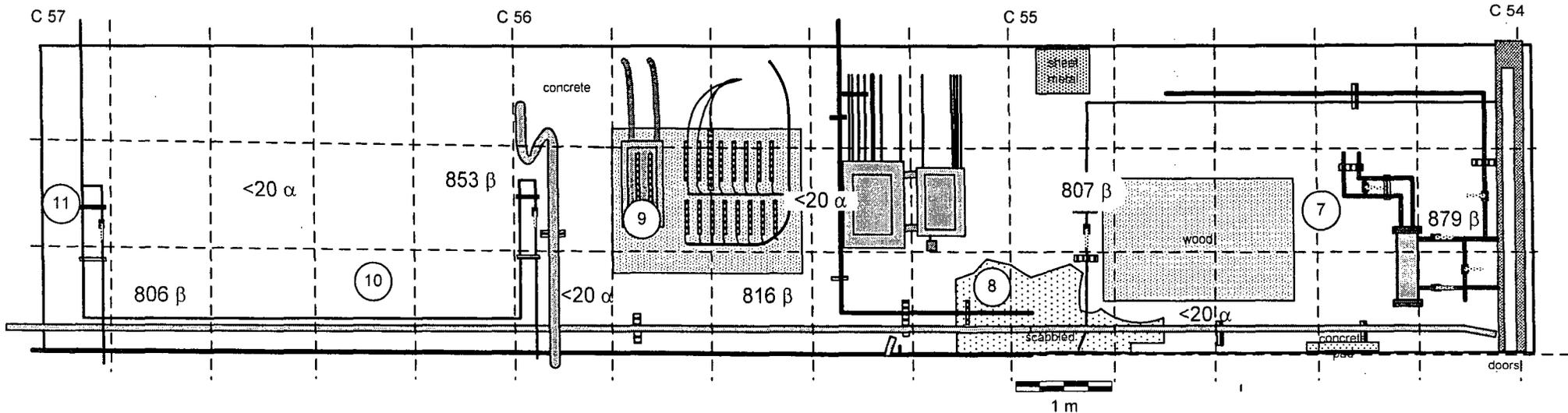
Notes:

1.  $## \alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background,  $< 20$  cpm.
2.  $#### \beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1019 cp2m,  $<$  MDA of 212 dpm/100  $\text{cm}^2$ .
3.  $(##)$  Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 $\text{cm}^2 \beta$	50 $\text{cm}^2 \alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	$< 20$ cpm
MDA concrete	212 dpm/100 $\text{cm}^2$	209 dpm/100 $\text{cm}^2$

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 02-17-04 to 02-24-04

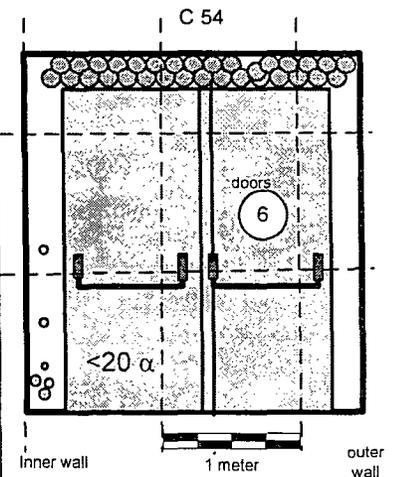
Figure 105: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 54 to C 57  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



Notes:

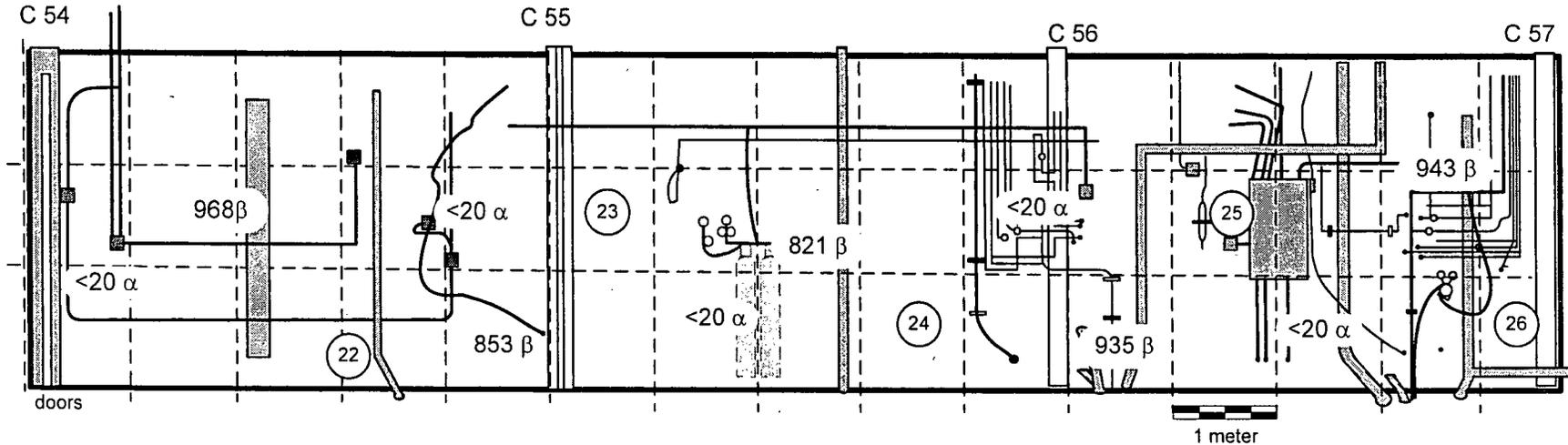
1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math>< 20</math> cpm.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 879 cp2m, <math>< \text{MDA}</math> of 212 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math>< 20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math>< 20</math> cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>



Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-17-04 & 02-23-04

Figure 106: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 54 to C 57  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



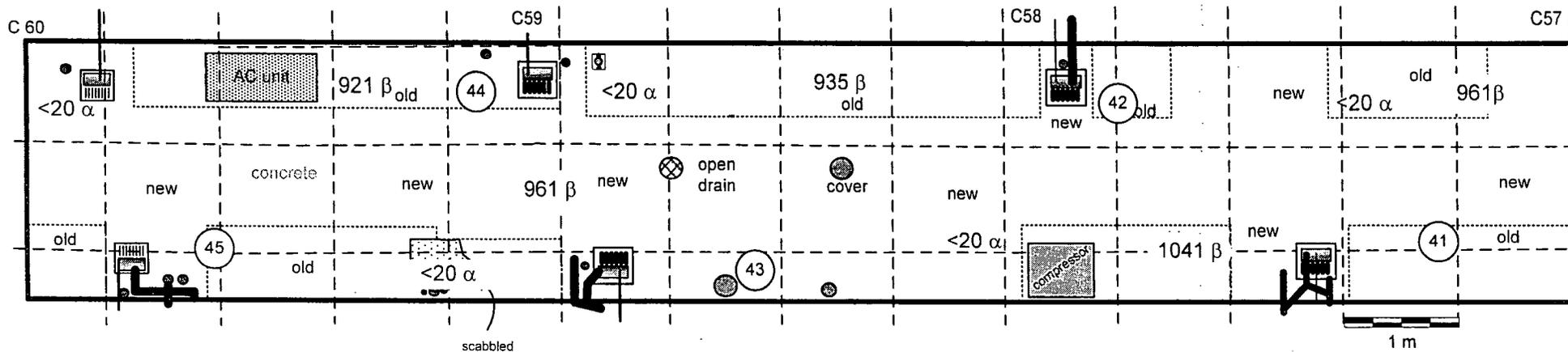
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background,  $< 20$  cpm.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 968 cp2m,  $< \text{MDA}$  of 200 dpm/100  $\text{cm}^2$ .
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 $\text{cm}^2$ $\beta$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd cement blk	843 $\pm$ 120 cp2m	$< 20$ cpm
MDA cement blk	200 dpm/100 $\text{cm}^2$	209 dpm/100 $\text{cm}^2$
Bkgd metal	576 $\pm$ 105 cp2m	$< 20$ cpm
MDA metal	166 dpm/100 $\text{cm}^2$	209 dpm/100 $\text{cm}^2$

Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-17-04 & 02-23-04

Figure 107: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 57 to C 60  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



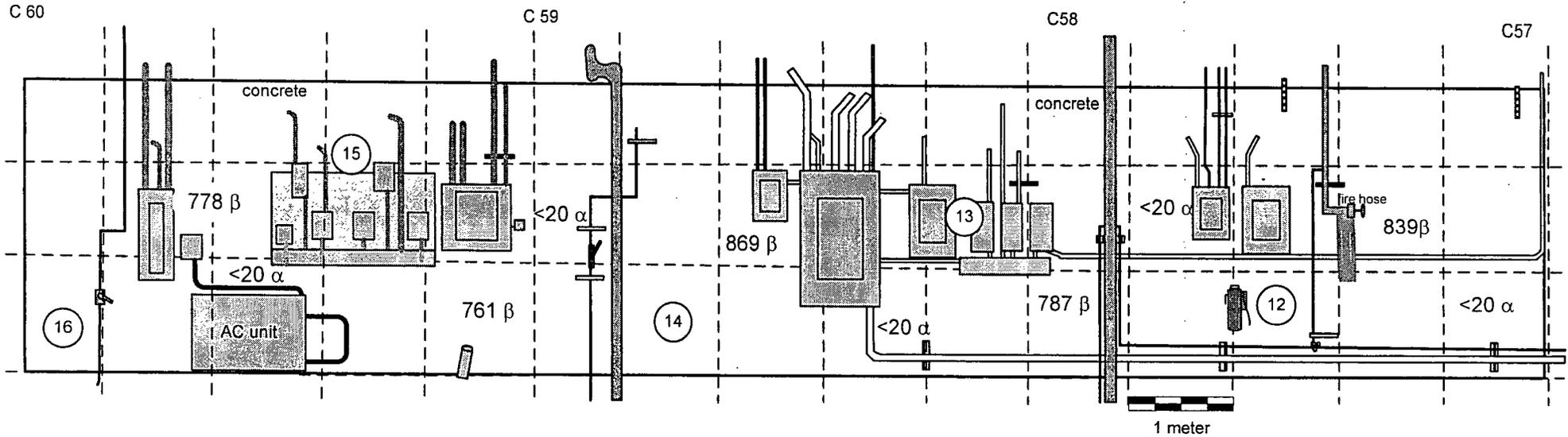
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20</math> cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1041 cp2m, <math><MDA</math> of 212 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 02-17-04 to 02-24-04

Figure 108: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 57 to C 60  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



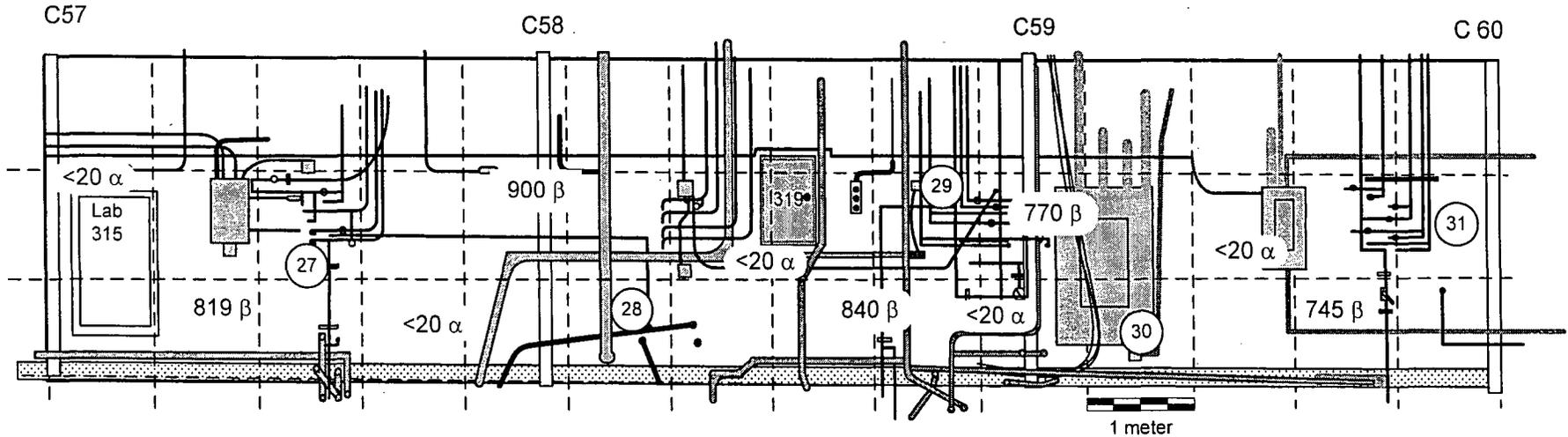
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 869 cp2m, <MDA of 212 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 ± 256 cp2m	<20 cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 109: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 57 to C60  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



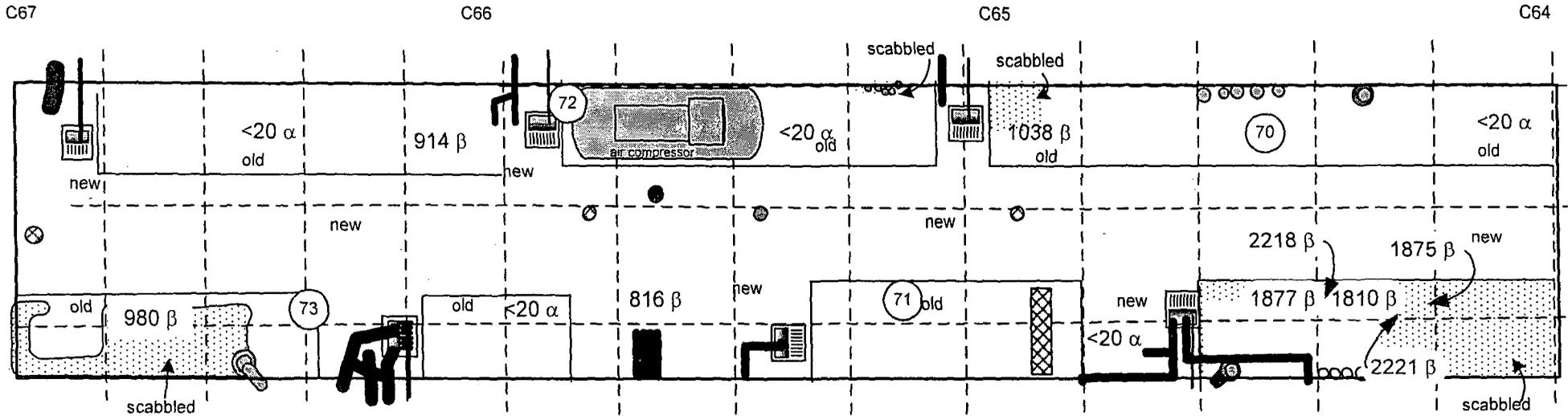
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 900 cp2m, <MDA of 200 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R.Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 110: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 64 to C 67  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



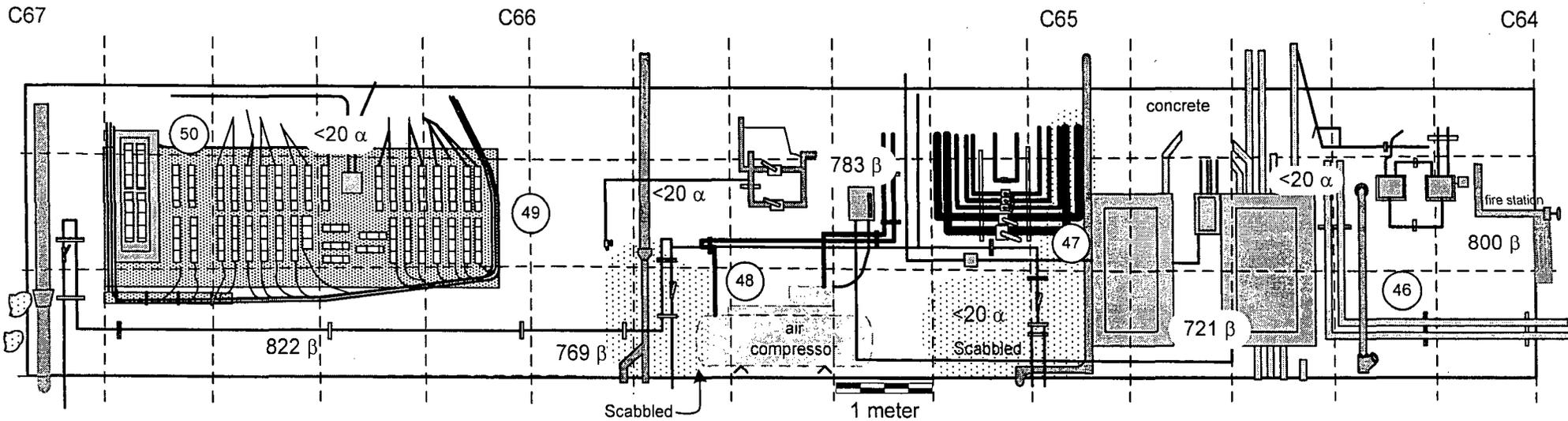
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math>< 20</math> cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 2221 cp2m, 1852 dpm/100 cm<sup>2</sup>. A total of five fixed beta measurements taken in this <math>< 1</math> m<sup>2</sup> area. Average result was 1980 cp2m, 1502 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math>< 20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 02-17-04 & 02-24-04

Figure 111: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 64 to C 67  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



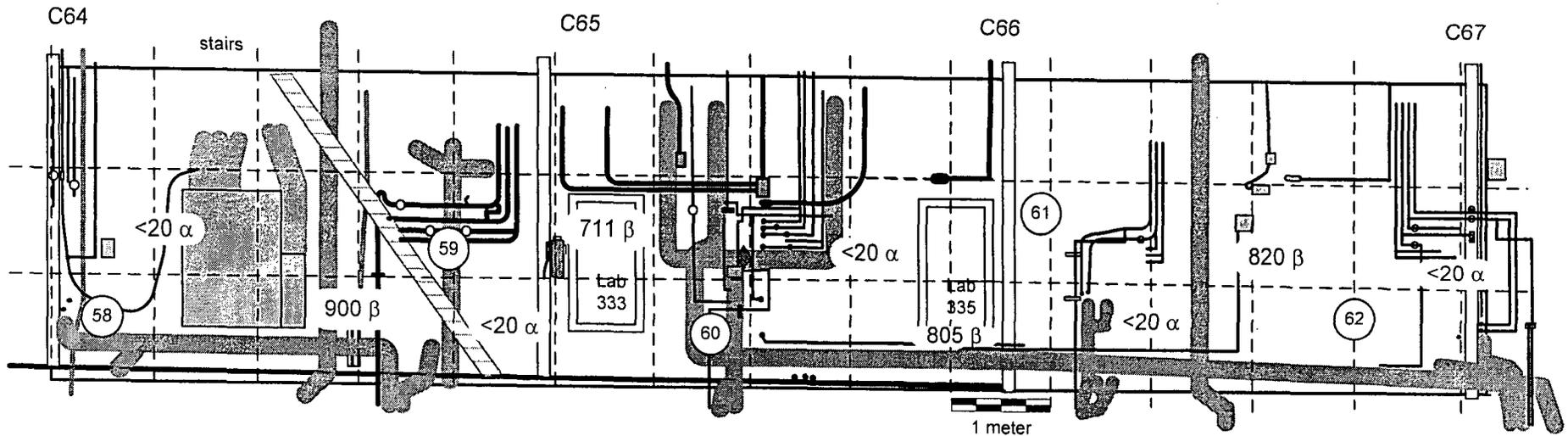
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. ##### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 822 cp2m, <MDA of 212 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 ± 256 cp2m	<20 cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R.Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 112: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 64 to C 67  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



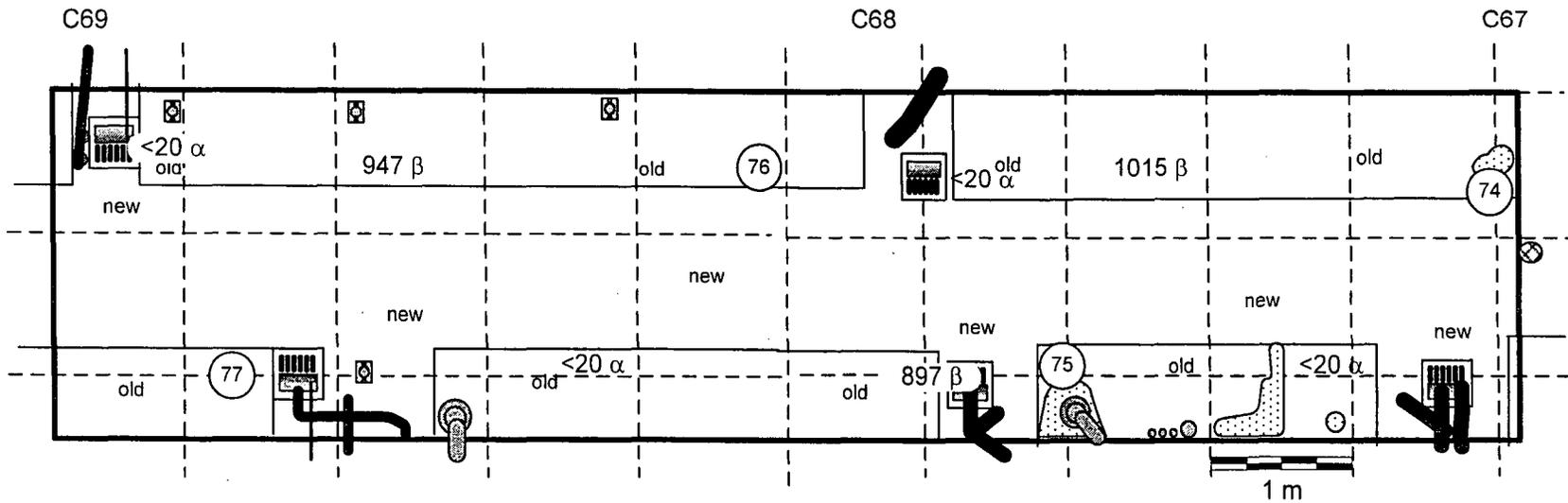
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20 \text{ cpm}</math>.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 900 cp2m, <math>< \text{MDA of } 200 \text{ dpm}/100 \text{ cm}^2</math>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120cp2m	<math><20 \text{ cpm}</math>
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math><20 \text{ cpm}</math>
MDA metal	177 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R.Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 113: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 67 to C 69  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



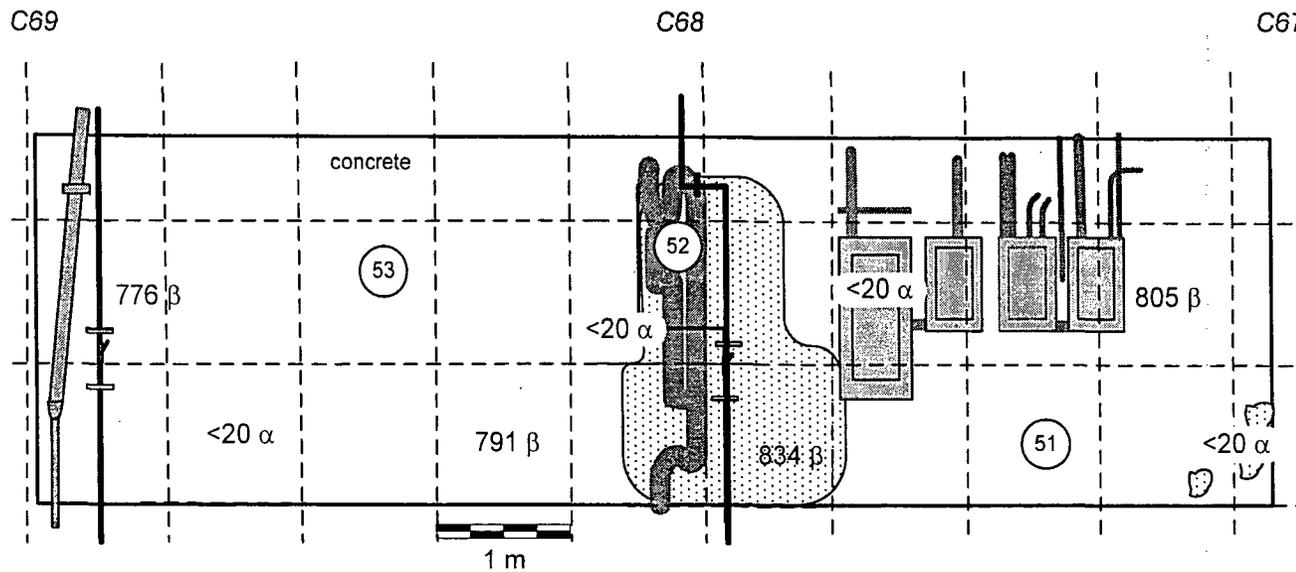
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20</math> cpm.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1015 cp2m, <math>< MDA</math> of 212 dpm/100  $\text{cm}^2$ .
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 $\text{cm}^2$ $\beta$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20</math> cpm
MDA concrete	212 dpm/100 $\text{cm}^2$	209 dpm/100 $\text{cm}^2$

Surveys conducted by: G. Sayer & R. Stowell  
Date: 02-17-04 & 02-24-04

Figure 114: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 67 to C 69  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



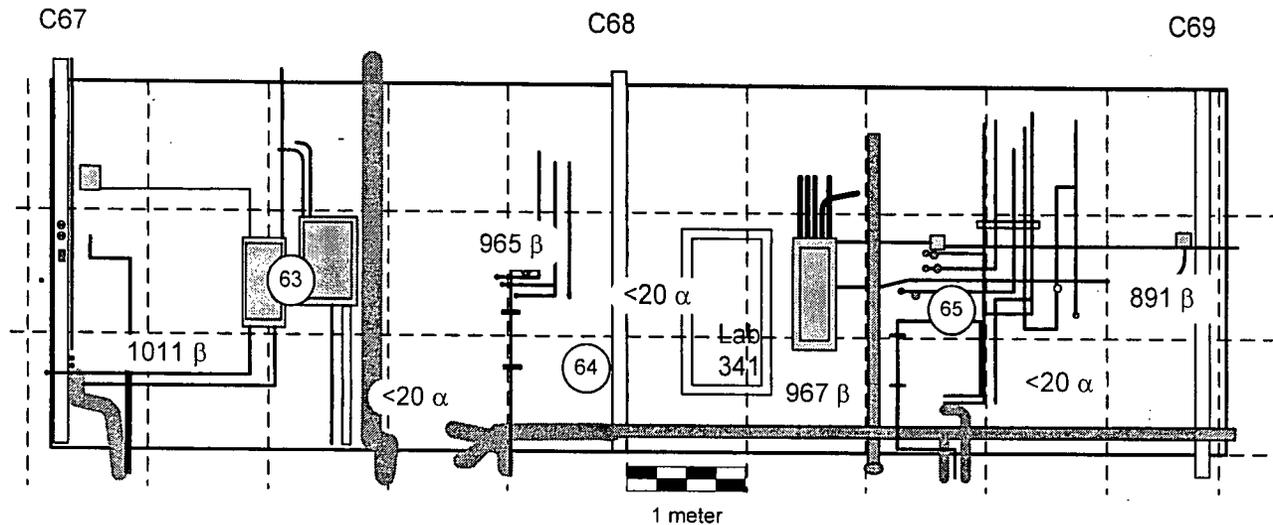
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20</math> cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 834 cp2m, <math><MDA</math> of 212 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math><20</math> cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 115: Building 2 Service Corridor First (Lowest) Level Outer Wall Column C 67 to C 69  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



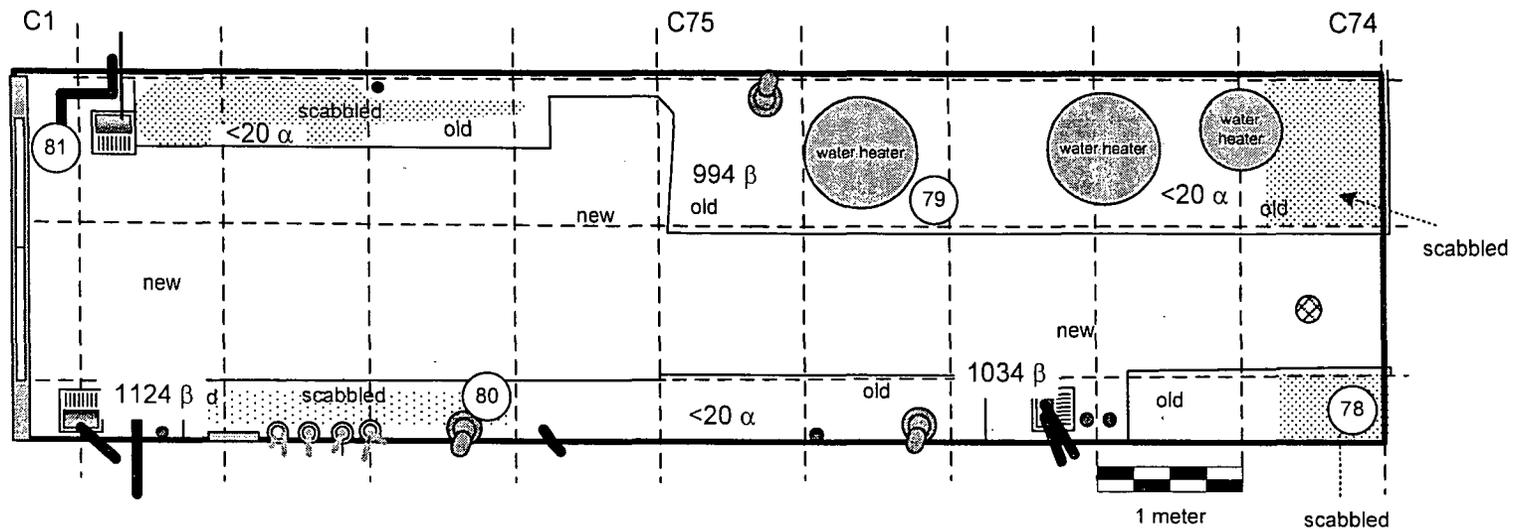
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1011 cp2m, 244 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd cement block	843 ± 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R.Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 116: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 74 to C 1  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



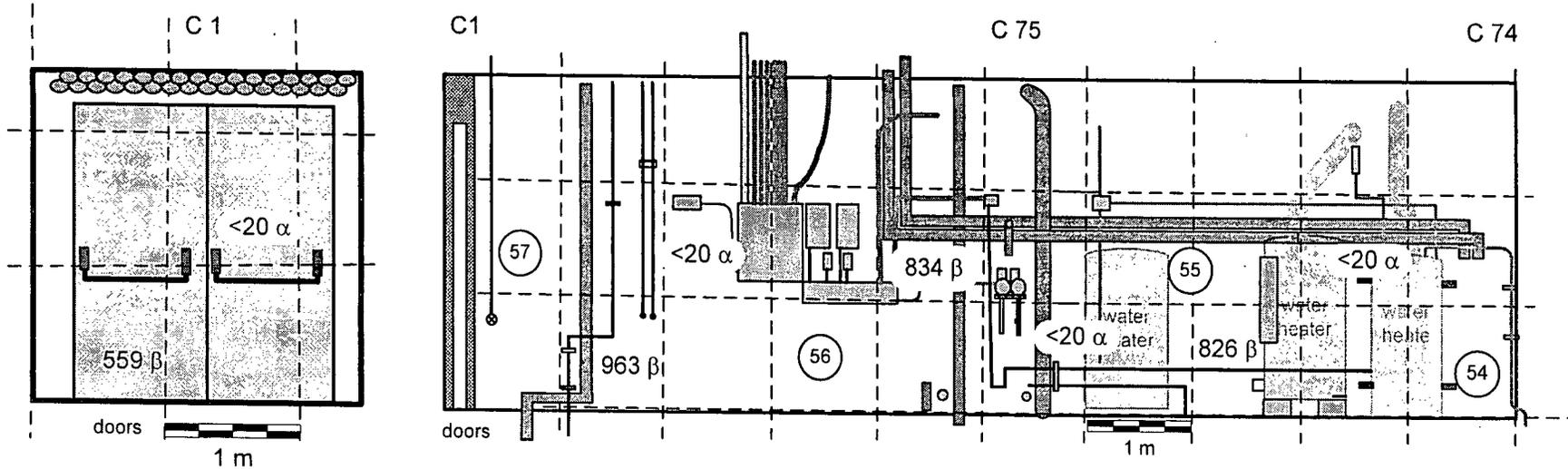
Notes:

1.  $\#\#\ \alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math>< 20</math> cpm.
2.  $\#\#\#\#\ \beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1124 cp2m, 256 dpm/100 cm<sup>2</sup>.
3.  $\textcircled{\#\#}$  Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math>< 20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & R. Stowell  
Dates: 02-17-04 & 02-24-04

Figure 117: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 74 to C 1  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



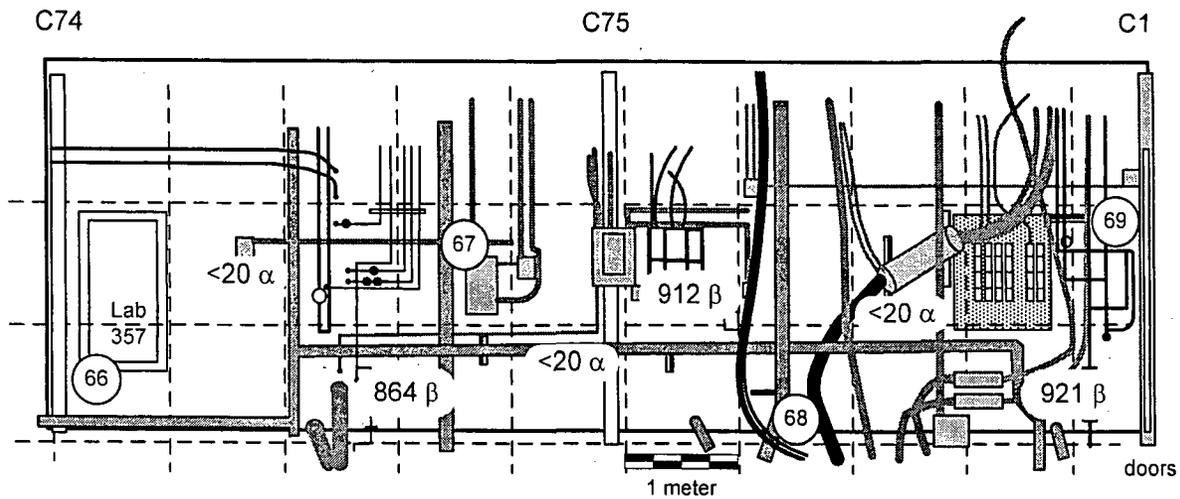
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. ##### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 963 cp2m, <MDA of 212 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd concrete	948 ± 256 cp2m	<20 cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R.Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 118: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 74 to C 1  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



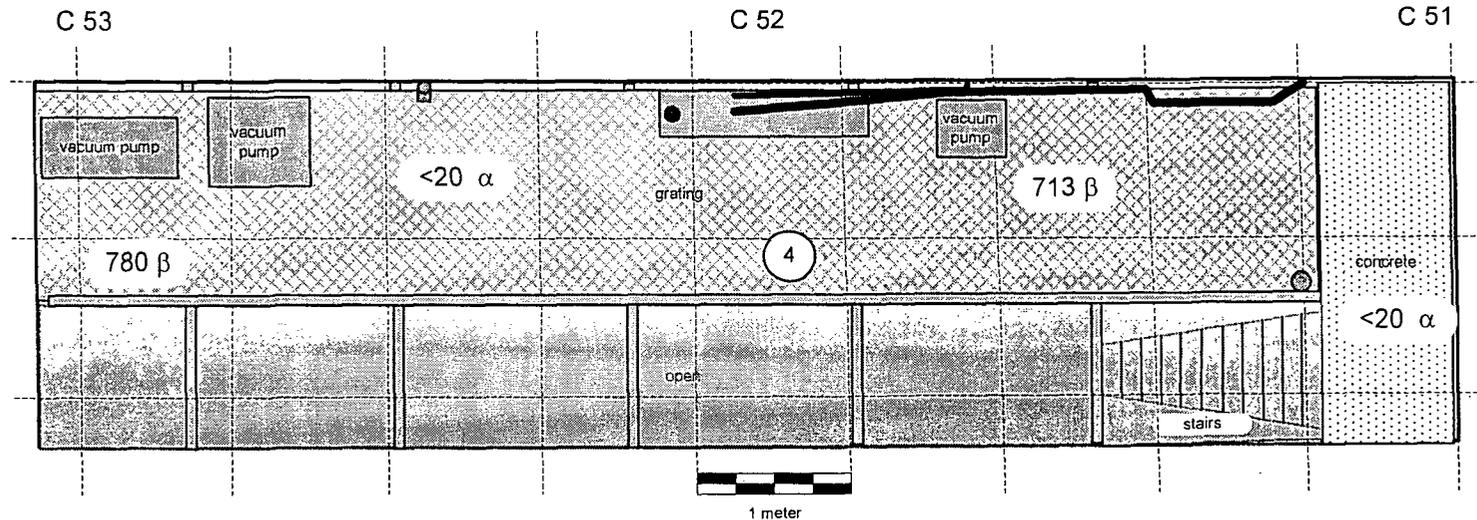
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20 \text{ cpm}</math>.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 921 cp2m, <math>< \text{MDA of } 200 \text{ dpm}/100 \text{ cm}^2</math>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	08-18-04	03-11-04
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120cp2m	<math><20 \text{ cpm}</math>
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math><20 \text{ cpm}</math>
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: R. Stowell & G. Sayer  
Dates: 02-17-04 & 02-24-04

Figure 119: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 51 to C 53  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



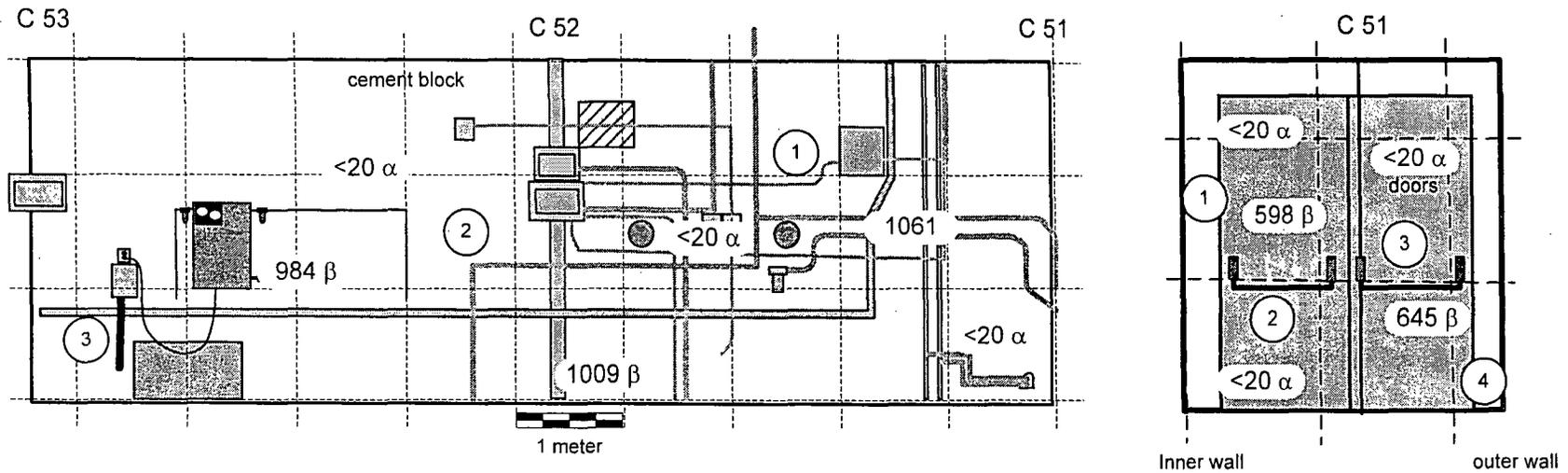
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20\ \text{cpm}</math>.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 780 cp2m, 249 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20\ \text{cpm}</math>
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal grating	588 $\pm$ 141 cp2m	<math><20\ \text{cpm}</math>
MDA metal grating	168 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Date: 10-27-04

Figure 120: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 51 to C 53  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



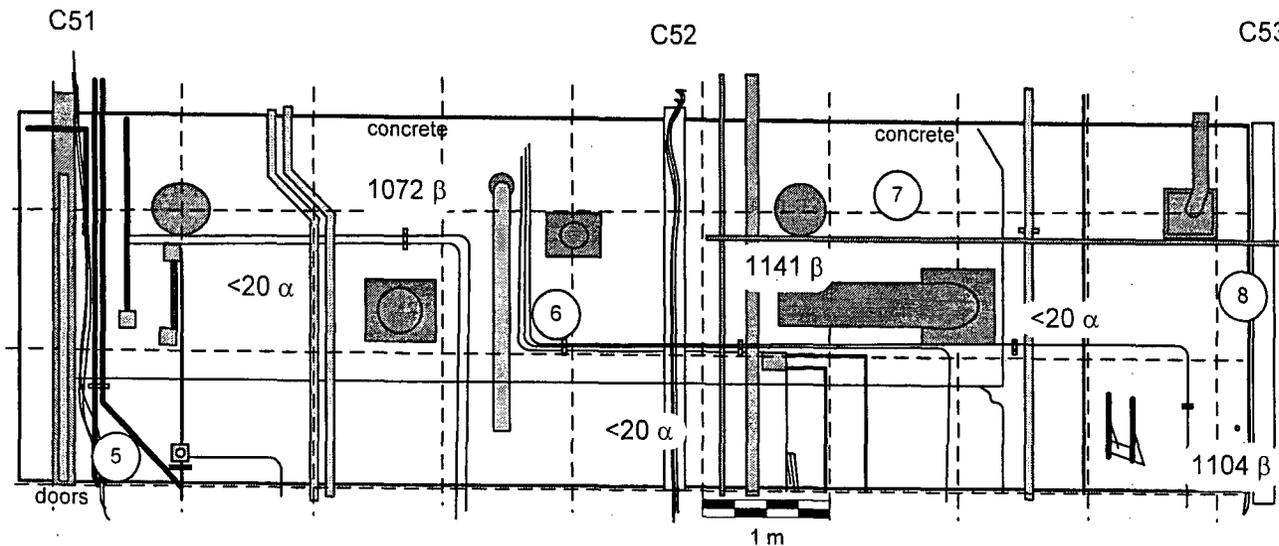
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. ##### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1061 cp2m, 317 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 ± 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-27-04 & 11-10-04

Figure 121: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 51 to C 53  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



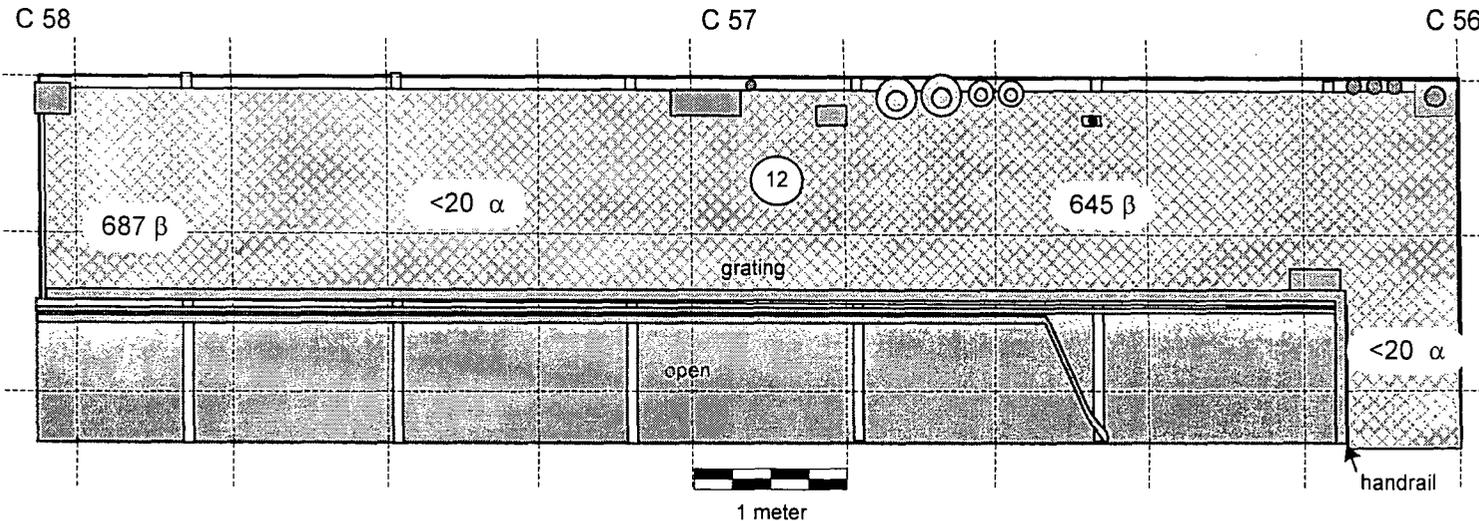
Notes:

1.  $\#\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background,  $<20$  cpm.
2.  $\#\#\#\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1141 cp2m, 280 dpm/100 cm<sup>2</sup>.
3.  $\textcircled{\#\#}$  Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd concrete	948 ± 212 cp2m	<20 cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-27-04

Figure 122: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 56 to C 58  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



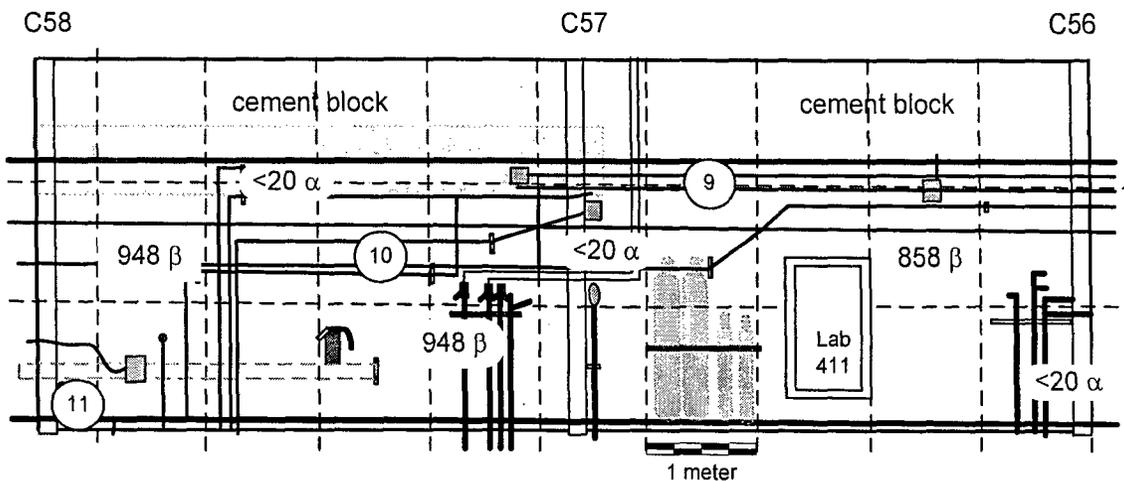
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. ##### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 687 cp2m, < MDA of 168 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model:	Ludlum 2221	Ludlum 12
Serial Number:	86302	138801
Probe:	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #:	142547	145696
Cal Due Date:	01-13-05	01-05-05
Efficiency:	34.36%	22.52%
Bkgd concrete:	948 ± 256 cp2m	<20 cpm
MDA concrete:	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal grating:	588 ± 141 cp2m	<20 cpm
MDA metal grating:	168 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D Dove  
Date: 10-27-04

Figure 123: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 56 to C 58  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



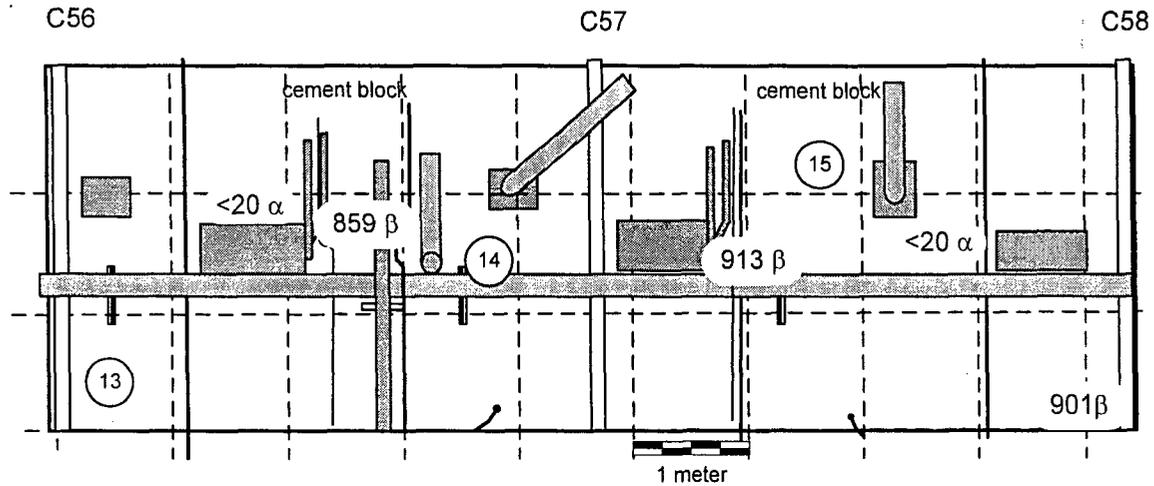
Notes:

1.  $\#\#\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background,  $< 20$  cpm.
2.  $\#\#\#\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 948 cp2m,  $< \text{MDA}$  of 200 dpm/100  $\text{cm}^2$ .
3.  $\textcircled{\#\#}$  Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 $\text{cm}^2$ $\beta$	50 $\text{cm}^2$ $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120cp2m	$< 20$ cpm
MDA cement block	200 dpm/100 $\text{cm}^2$	209 dpm/100 $\text{cm}^2$
Bkgd metal	576 $\pm$ 105 cp2m	$< 20$ cpm
MDA metal	166 dpm/100 $\text{cm}^2$	209 dpm/100 $\text{cm}^2$

Survey conducted by: G. Sayer & D. Dove  
Date: 10-27-04

Figure 124: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C56 to C 58  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



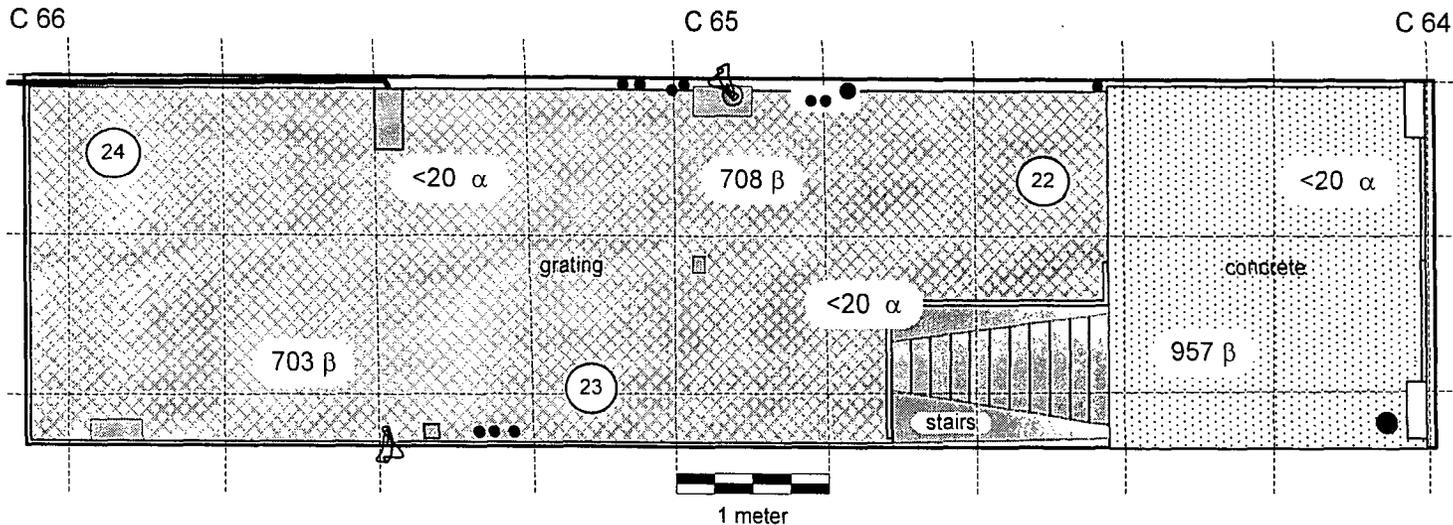
Notes:

1.  $\#\#\ \alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background,  $< 20$  cpm.
2.  $\#\#\#\#\ \beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 913 cp2m,  $< \text{MDA of } 200 \text{ dpm}/100 \text{ cm}^2$ .
3.  $\textcircled{\#\#}$  Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120 cp2m	$< 20$ cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	$< 20$ cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-27-04

Figure 125: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 64 to C 66  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



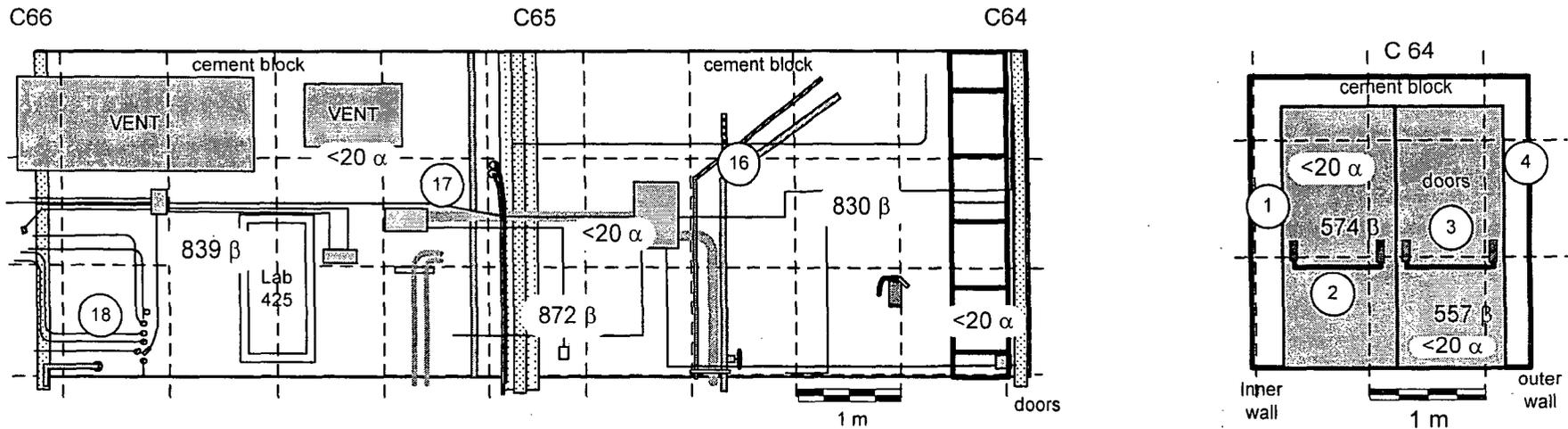
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20</math> cpm.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 957 cp2m, <math>< MDA</math> of 2121dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20</math> cpm
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal grating	588 $\pm$ 141 cp2m	<math><20</math> cpm
MDA metal grating	168 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D Dove  
Date: 10-27-04

Figure 126: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 64 to C 66  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



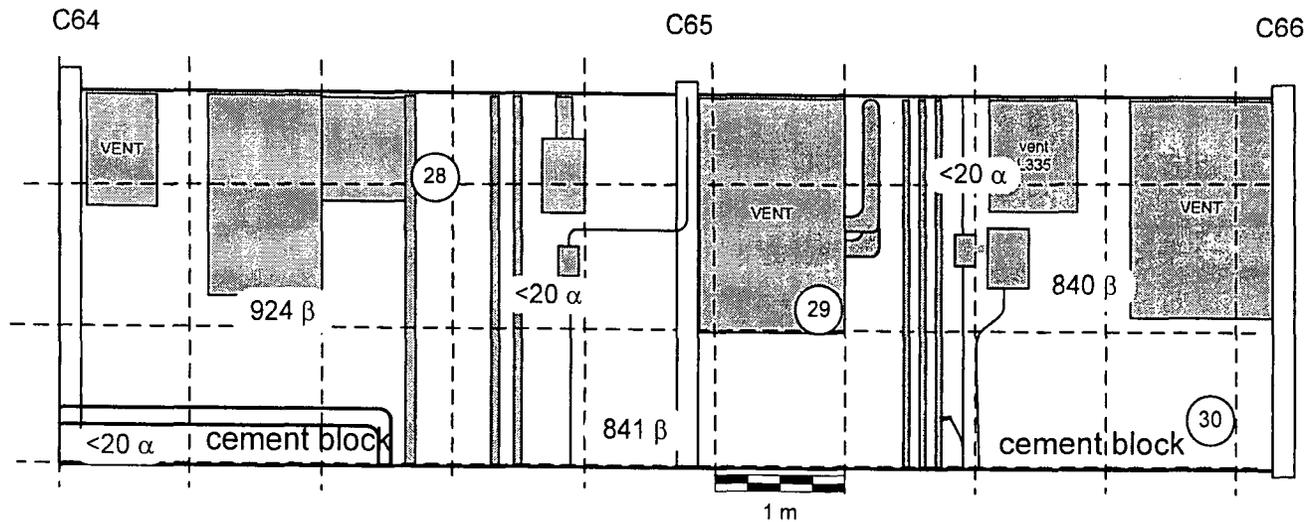
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. #### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 872 cp2m, <MDA of 200 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 ± 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-25-04 & 11-10-04

Figure 127: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 64 to C 66  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



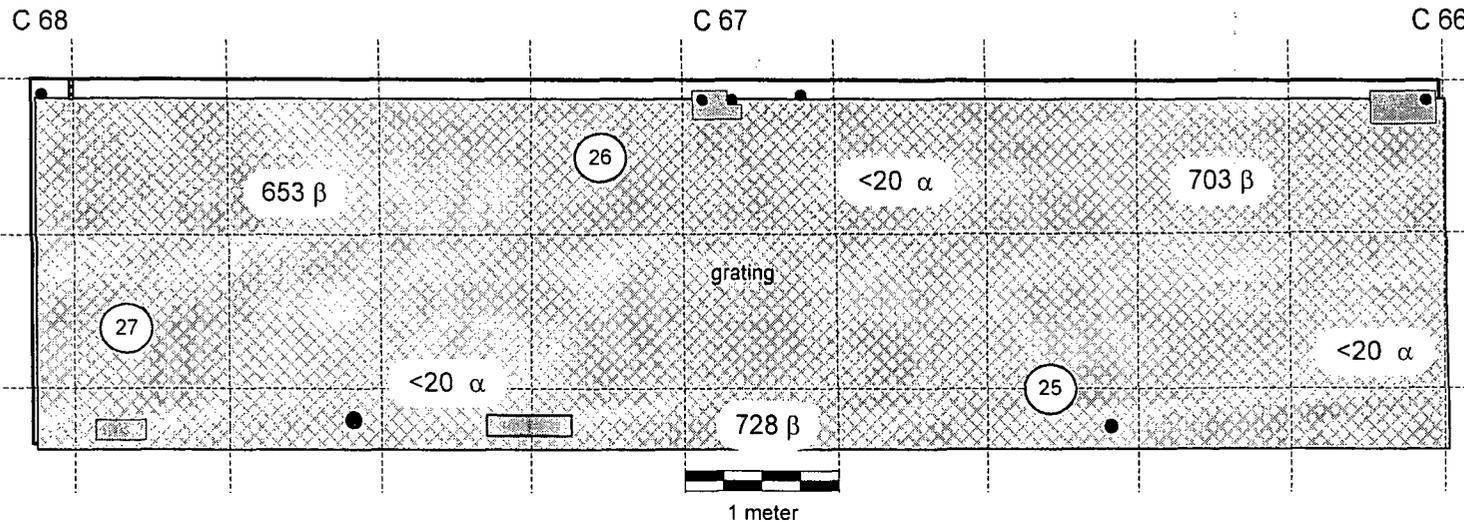
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. ##### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 924 cp2m, <MDA of 200 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 ± 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-26-04

Figure 128: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 66 to C 68  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



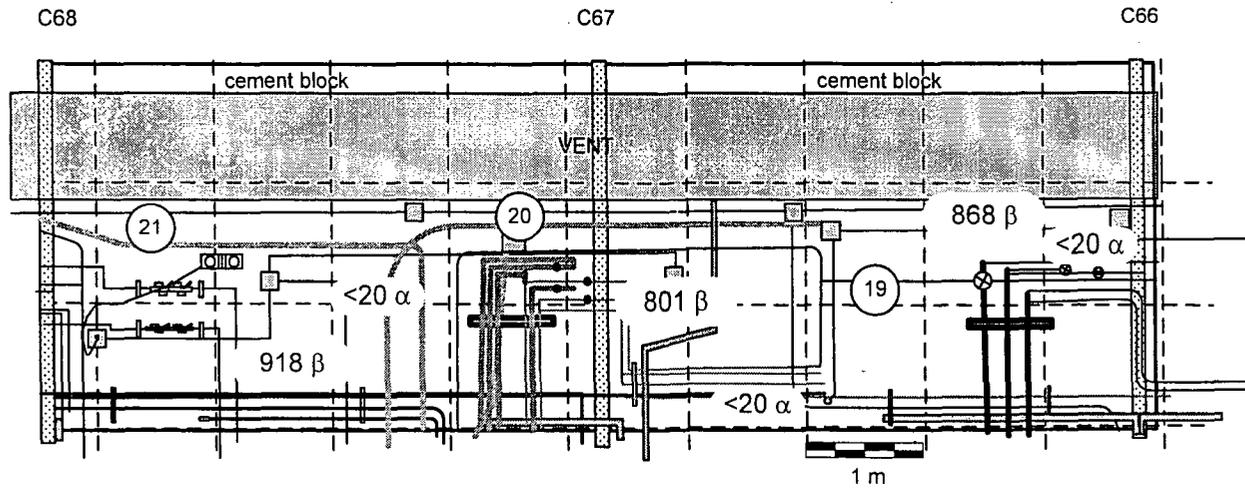
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20</math> cpm.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 728 cp2m, <math><MDA</math> of 168 dpm/100  $cm^2$ .
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 $cm^2$ $\beta$	50 $cm^2$ $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20</math> cpm
MDA concrete	212 dpm/100 $cm^2$	209 dpm/100 $cm^2$
Bkgd metal grating	588 $\pm$ 141 cp2m	<math><20</math> cpm
MDA metal grating	168 dpm/100 $cm^2$	209 dpm/100 $cm^2$

Surveys conducted by: G. Sayer & D Dove  
Date: 10-26-04

Figure 129: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 66 to C 68  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



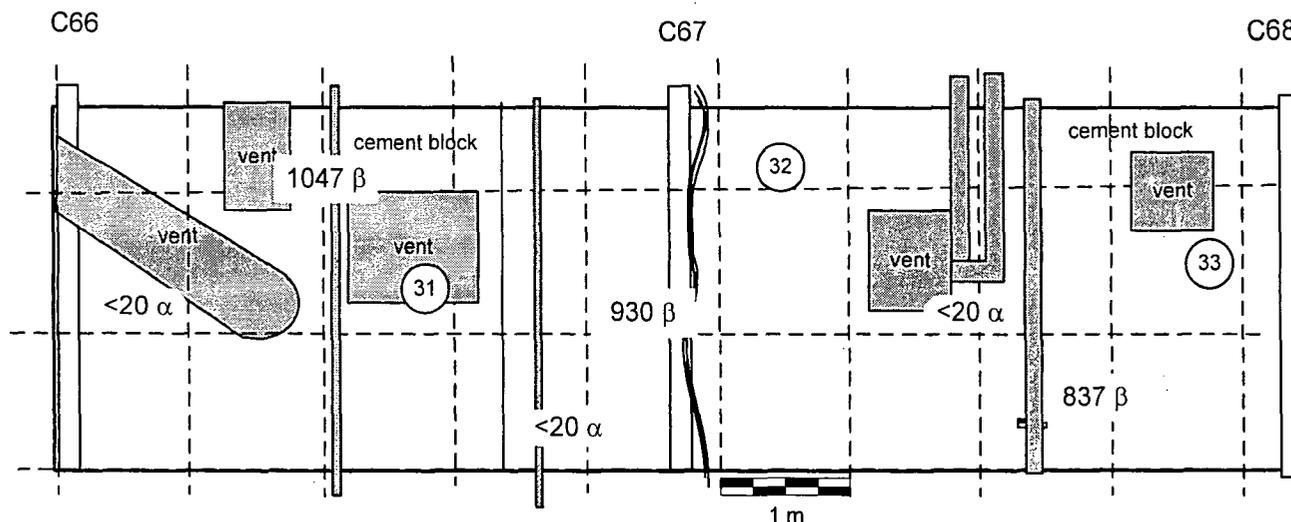
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. #### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 918 cp2m, <MDA of 200 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 ± 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Date: 10-25-04

Figure 130: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 66 to C 68  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



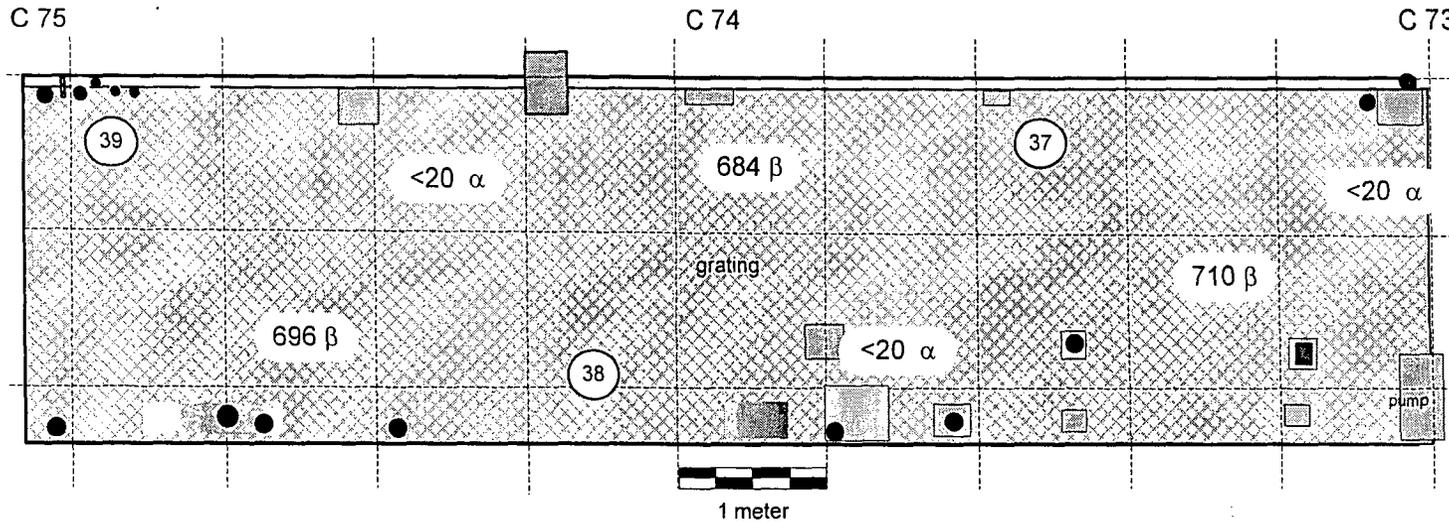
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20 \text{ cpm}</math>.
2. #####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 1047 cp2m, 297 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120cp2m	<math><20 \text{ cpm}</math>
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	<math><20 \text{ cpm}</math>
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-26-04

Figure 131: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 73 to C 75  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



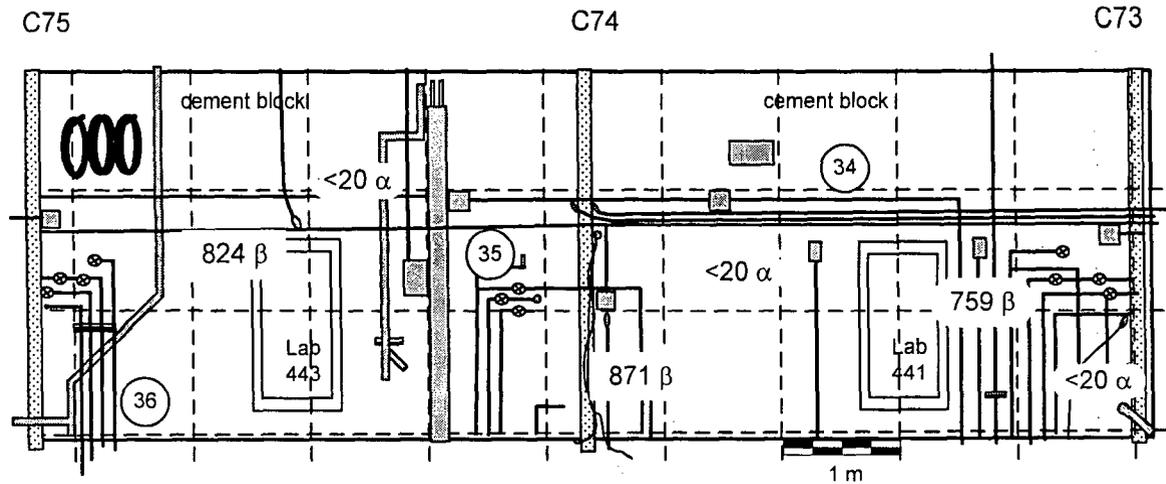
Notes:

1. **##**  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, <math><20\ \text{cpm}</math>.
2. **####**  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 710 cp2m, 178 dpm/100 cm<sup>2</sup>.
3. **(##)** Denotes wipe location. Wipe results are provided in Table 5.

	Instruments	
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd concrete	948 $\pm$ 256 cp2m	<math><20\ \text{cpm}</math>
MDA concrete	212 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal grating	588 $\pm$ 141 cp2m	<math><20\ \text{cpm}</math>
MDA metal grating	168 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D Dove  
Date: 10-26-04

Figure 132: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 73 to C 75  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



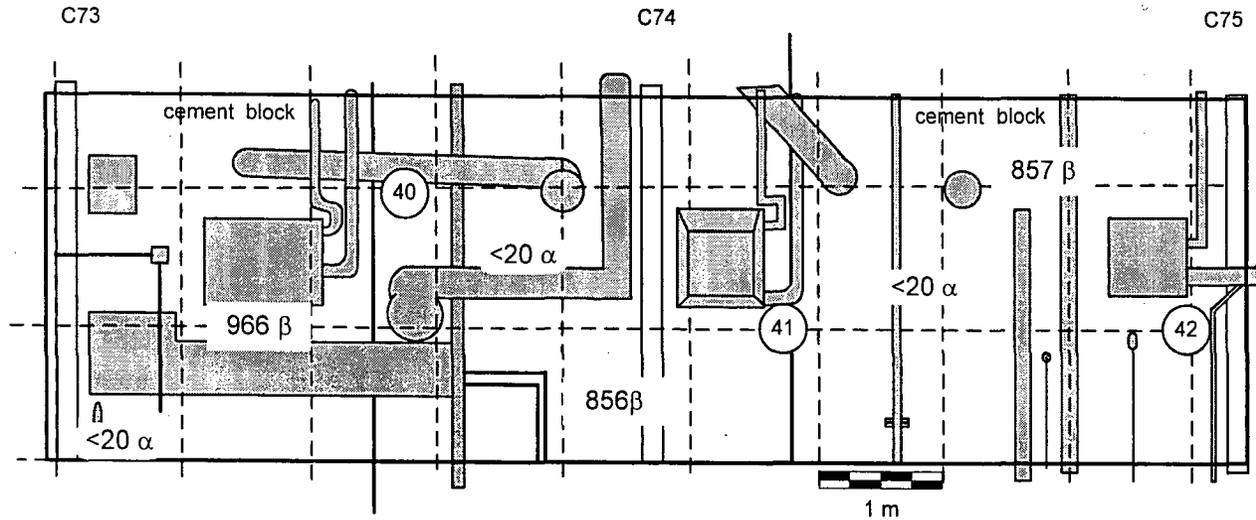
Notes:

1. ## α Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background, < 20 cpm.
2. ##### β Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 871 cp2m, <MDA of 200 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> β	50 cm <sup>2</sup> α
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 ± 120cp2m	<20 cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 ± 105 cp2m	<20 cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-26-04

Figure 133: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 73 to C 75  
Fixed Alpha and Beta Measurement Locations and Results and Wipe Survey Locations



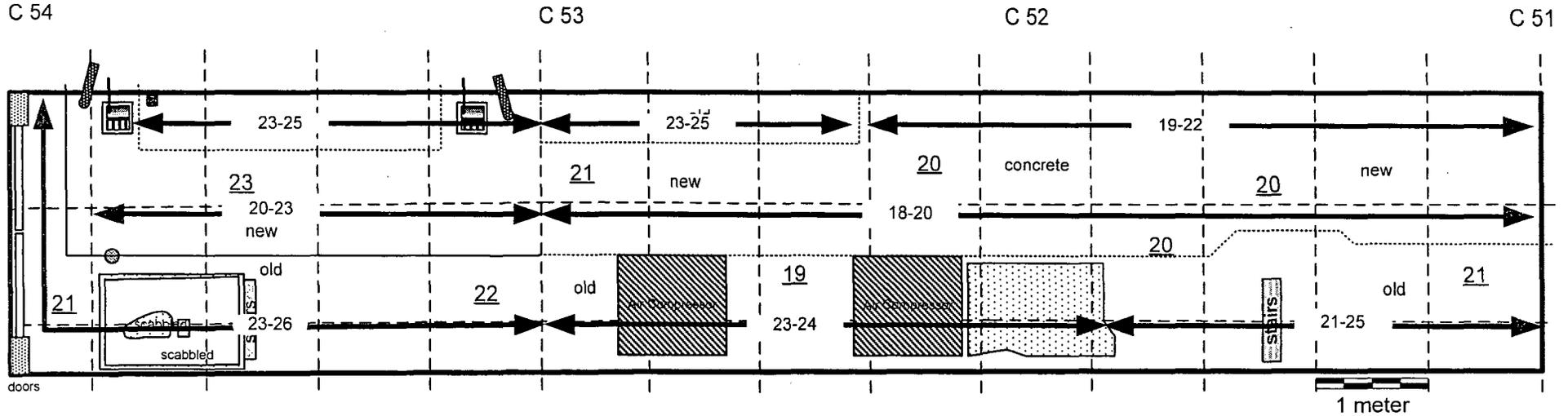
Notes:

1. ##  $\alpha$  Denotes fixed alpha measurement in cpm. All fixed alpha measurements were at background,  $< 20$  cpm.
2. ####  $\beta$  Denotes fixed beta measurement in cp2m. Maximum fixed beta measurement was 966 cp2m,  $< \text{MDA}$  of 200 dpm/100 cm<sup>2</sup>.
3. (##) Denotes wipe location. Wipe results are provided in Table 5.

Instruments		
Model	Ludlum 2221	Ludlum 12
Serial Number	86302	138801
Probe	100 cm <sup>2</sup> $\beta$	50 cm <sup>2</sup> $\alpha$
Probe Serial #	142547	145696
Cal Due Date	01-13-05	01-05-05
Efficiency	34.36%	22.52%
Bkgd cement block	843 $\pm$ 120cp2m	$< 20$ cpm
MDA cement block	200 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>
Bkgd metal	576 $\pm$ 105 cp2m	$< 20$ cpm
MDA metal	166 dpm/100 cm <sup>2</sup>	209 dpm/100 cm <sup>2</sup>

Surveys conducted by: G. Sayer & D. Dove  
Dates: 10-26-04

Figure 134: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 51 to C 54  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



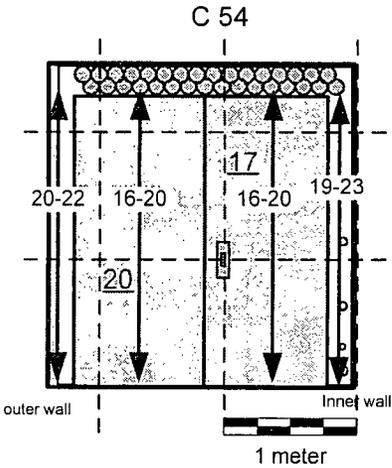
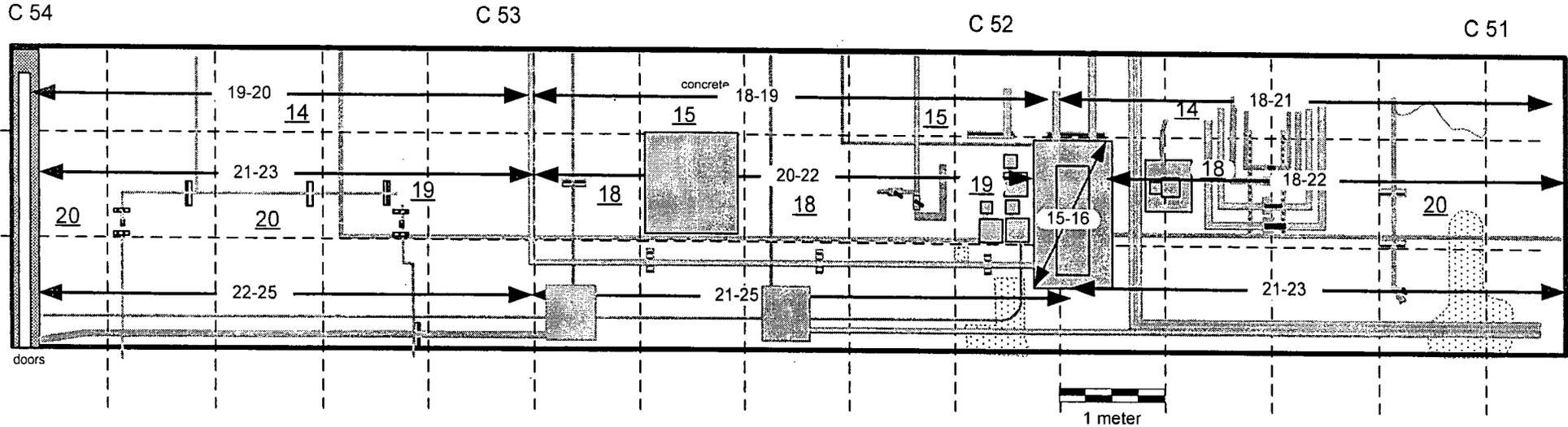
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2.  $\leftarrow \text{###} \rightarrow$  Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial #	153590	
Probe	2" X 2" NaI $\gamma$	
Probe Ser. #	155190	
Cal Due Date	02-12-04	
Background	contact	@.1 meter
	concrete	15-24 $\mu\text{R/hr}$
		14-22 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
Dates: 01-26-04

Figure 135: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 51 to C 54  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



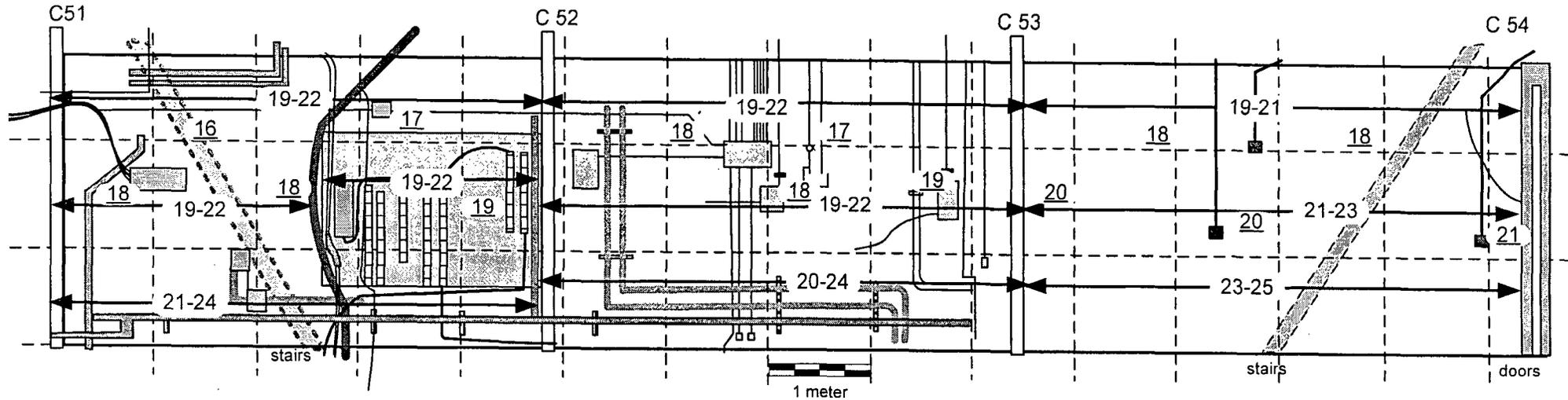
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. <math>\leftarrow \#\#\# \rightarrow</math> Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
Dates: 01-26-04

Figure 136: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 51 to C 54  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



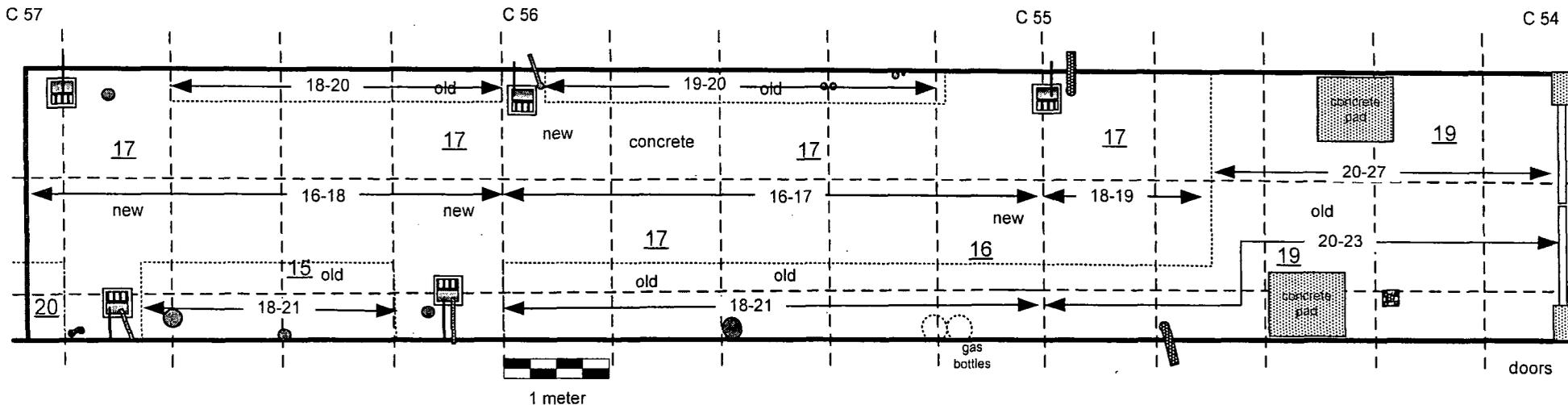
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	12-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Date: 01-26-04

Figure 137: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 54 to C 57  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



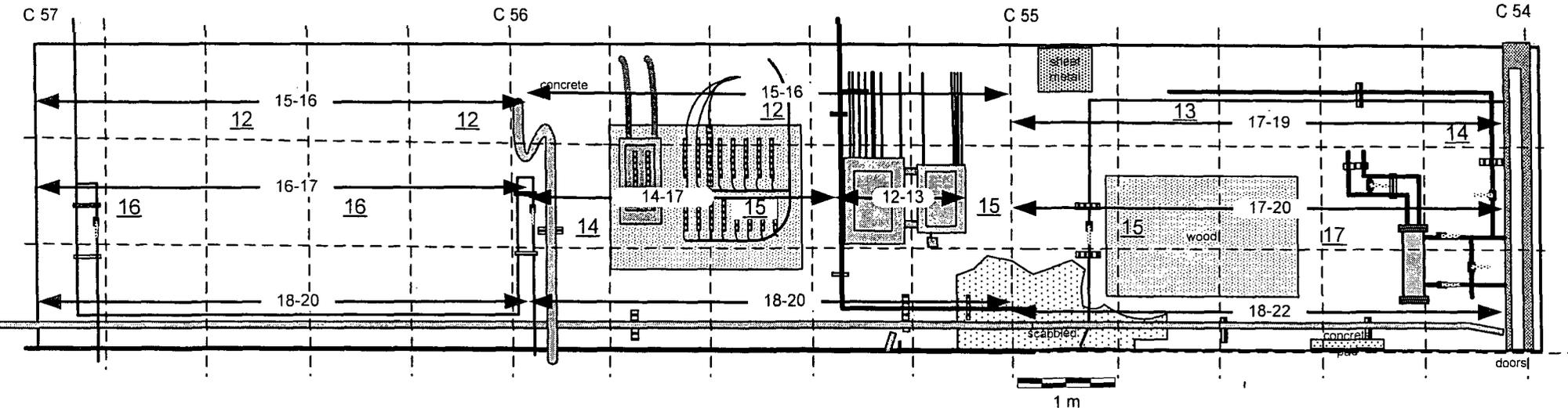
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2.  $\leftarrow \text{###} \rightarrow$  Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
Dates: 01-26-04 to 01-27-04

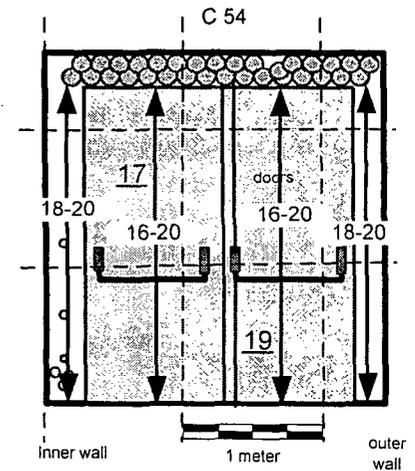
Figure 138: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 54 to C 57  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



Notes:

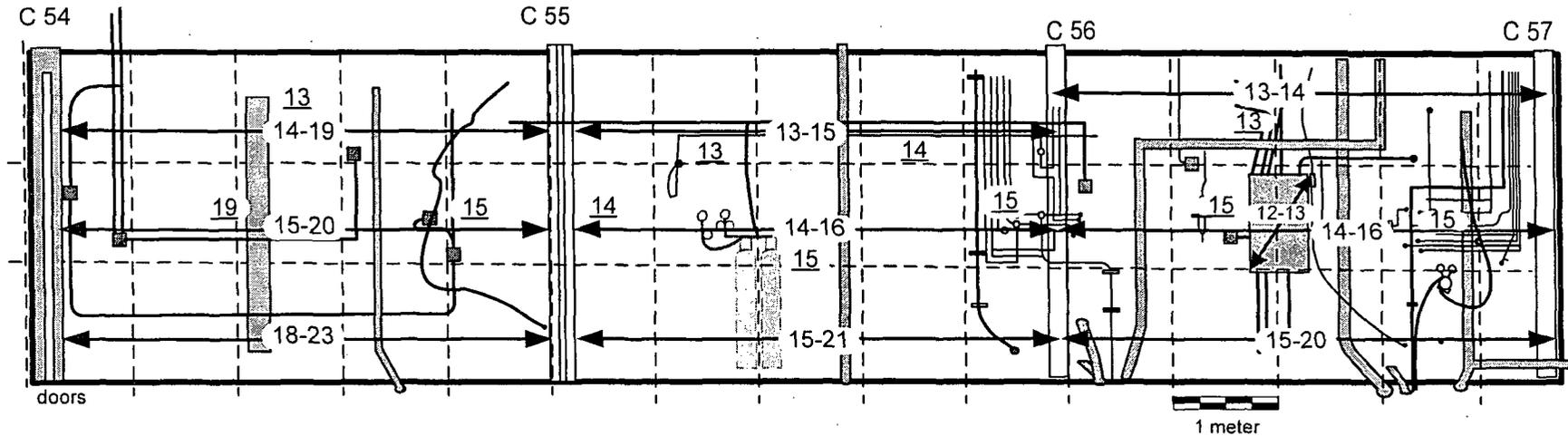
1. **##** Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. **← ### →** Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument	
Model	Ludlum 3
Serial Number	153590
Probe	2"X 2" NaI $\gamma$
Probe Serial #	155190
Cal Due Date	02-12-04
Backgrounds	Contact @1 meter
Concrete	15-24 $\mu\text{R/hr}$ 14-22 $\mu\text{R/hr}$
Cement/Block	13-20 $\mu\text{R/hr}$ 13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$ 13-19 $\mu\text{R/hr}$



Survey conducted by: G. Sayer  
Date: 01-26-04

Figure 139: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 54 to C 57  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



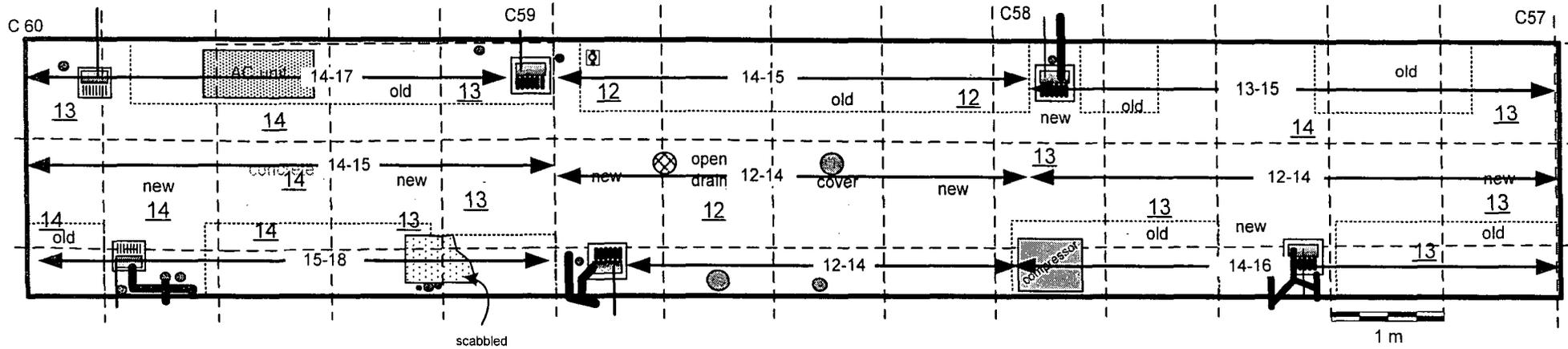
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Survey conducted by: G Sayer  
Dates: 01-26-04 & 01-27-04

Figure 140: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 57 to C 60  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



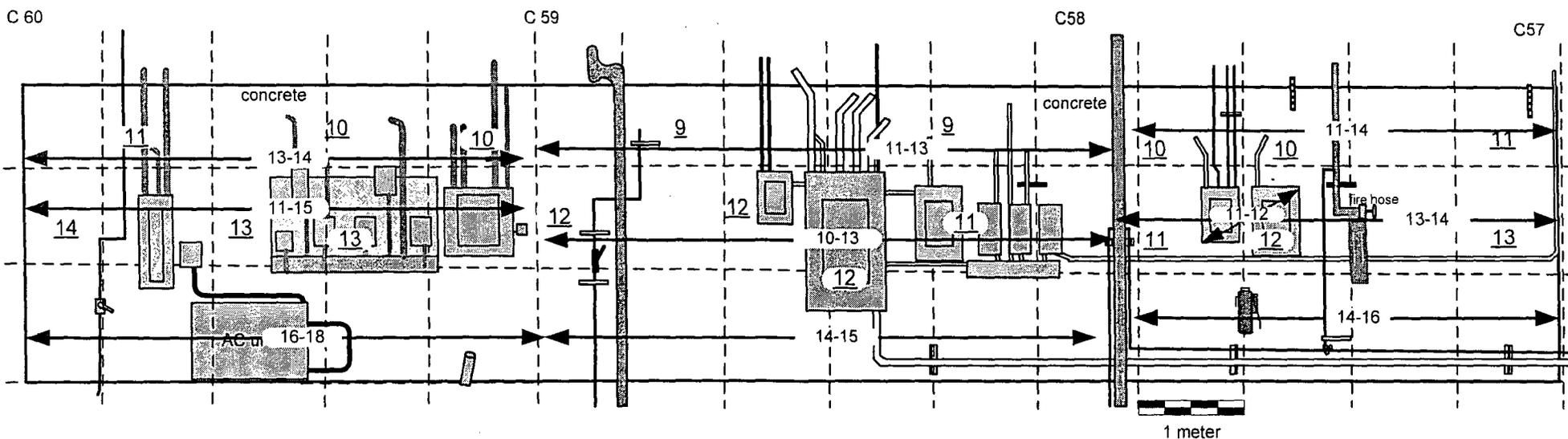
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
 Dates: 01-27-04 & 02-03-04

Figure 141: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 57 to C 60  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



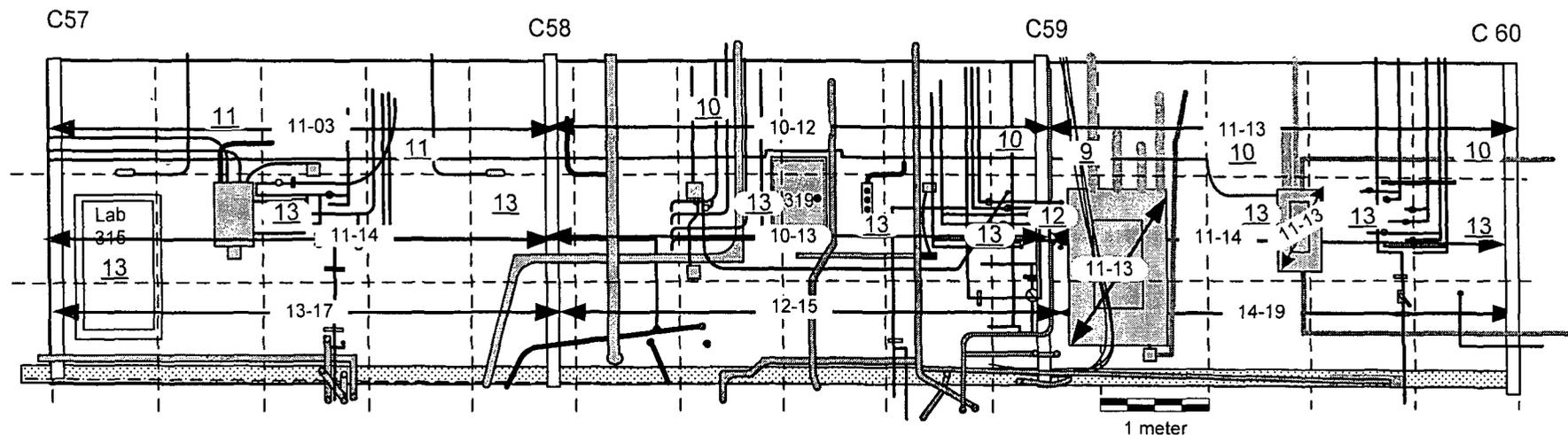
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2.  $\leftarrow \text{###} \rightarrow$  Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Survey conducted by: G Sayer  
Dates: 01-27-04 & 02-03-04

Figure 142: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 57 to C 60  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



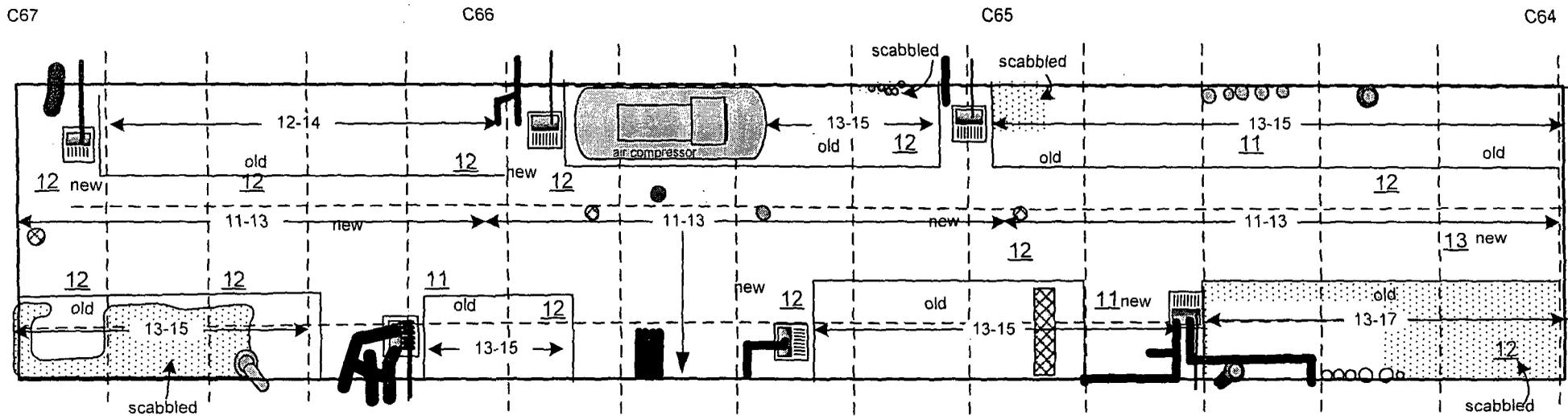
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2.  $\leftarrow \text{###} \rightarrow$  Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Dates: 01-27-04 & 02-03-04

Figure 143: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 64 to C 67  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



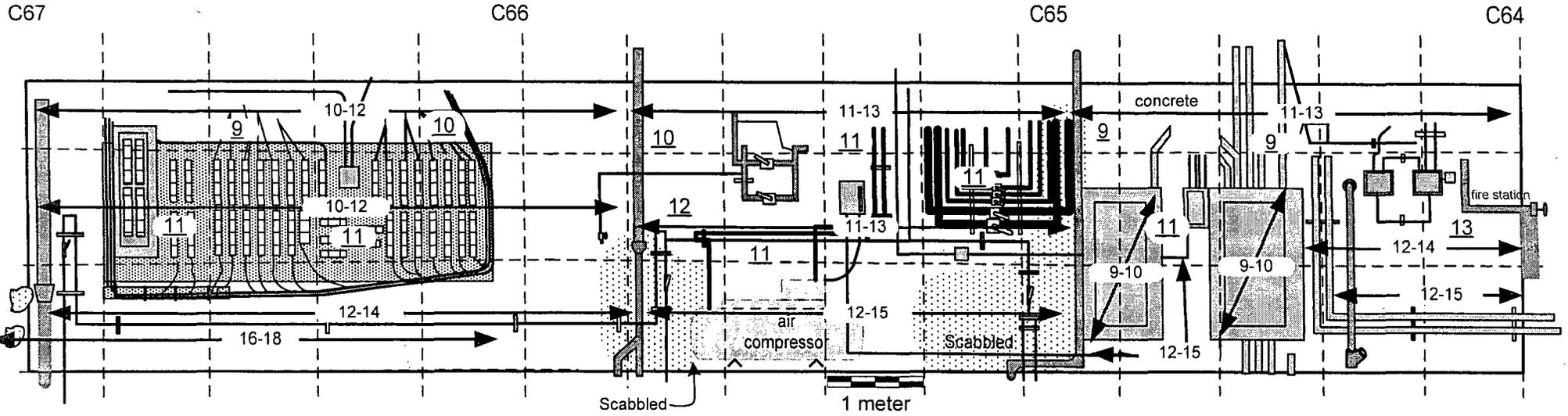
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
 Dates: 02-03-04 & 02-04-04

Figure 144: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 64 to C 67  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



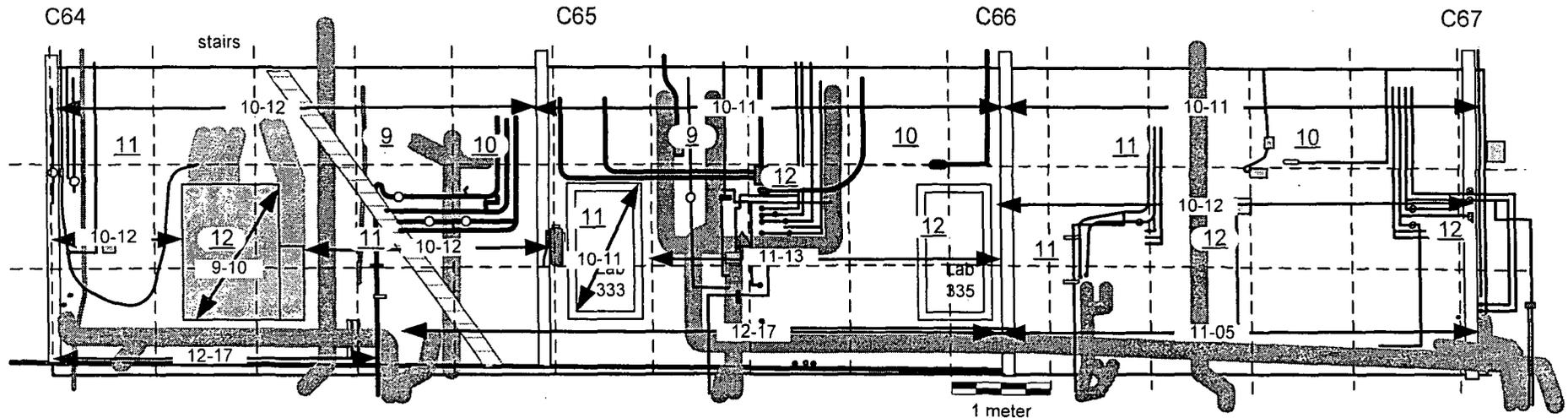
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
 Dates: 02-03-04 & 02-04-04

Figure 145: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 64 to C 67  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



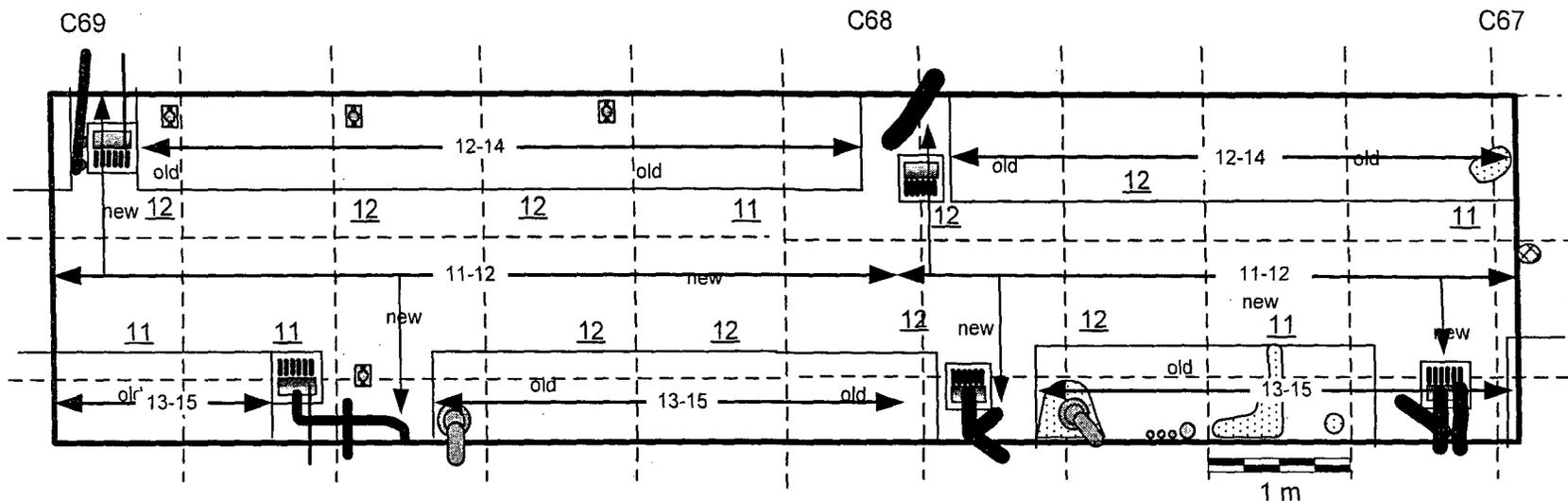
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Dates: 02-03-04 & 02-04-04

Figure 146: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 67 to C 69  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



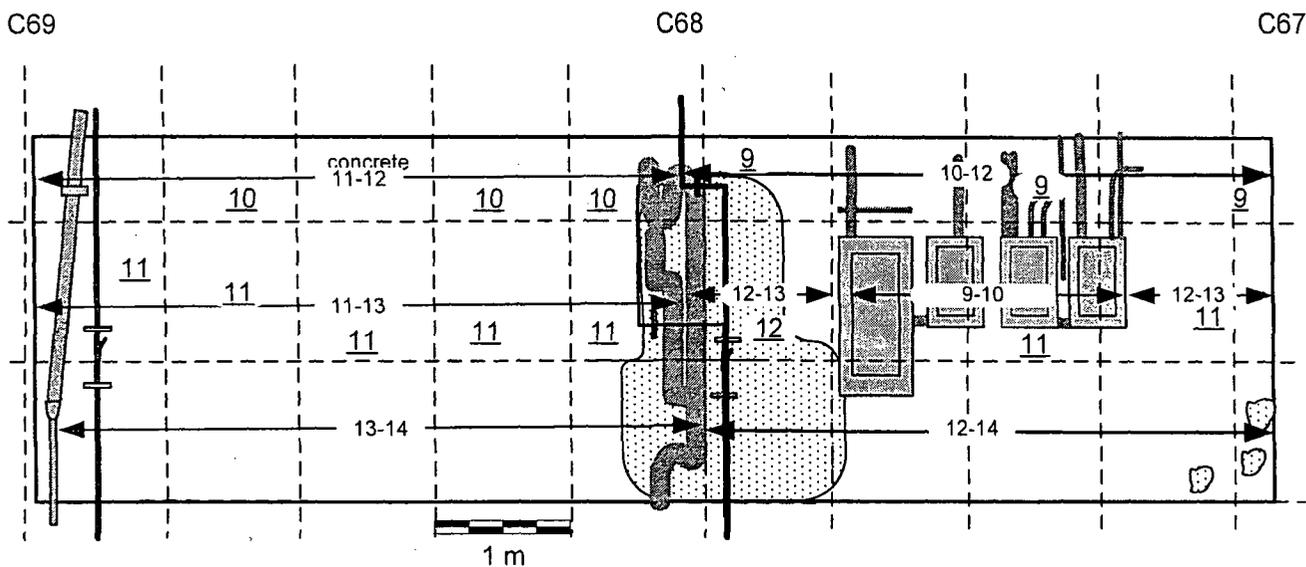
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
 Dates: 02-04-04

Figure 147: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 67 to C 69  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



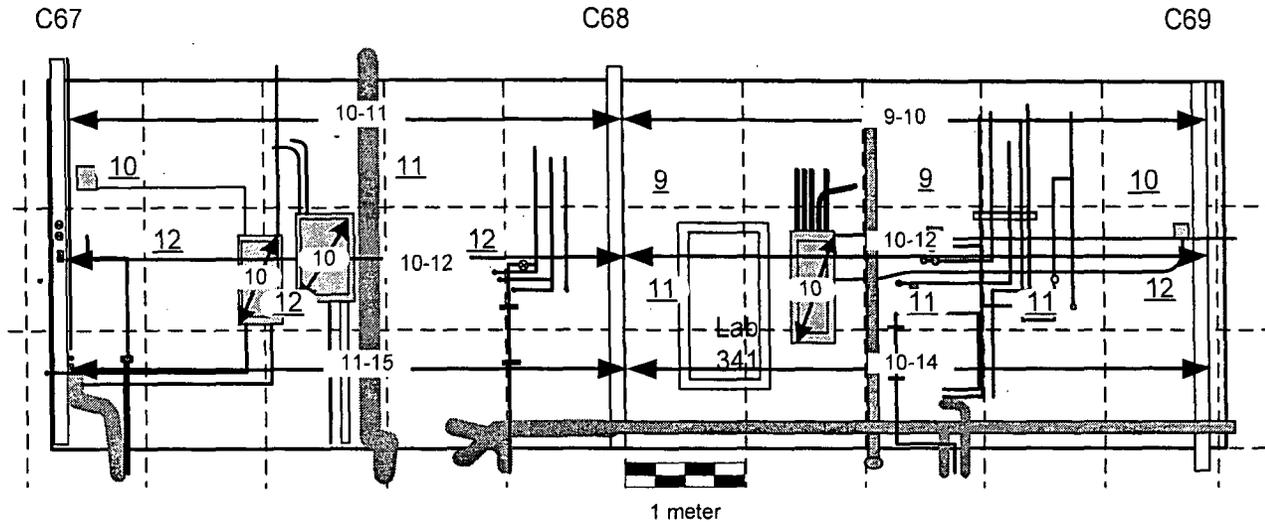
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Dates: 02-04-04

Figure 148: Building 2 Service Corridor First (Lowest) Level Outer Wall Column C 67 to C 69  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



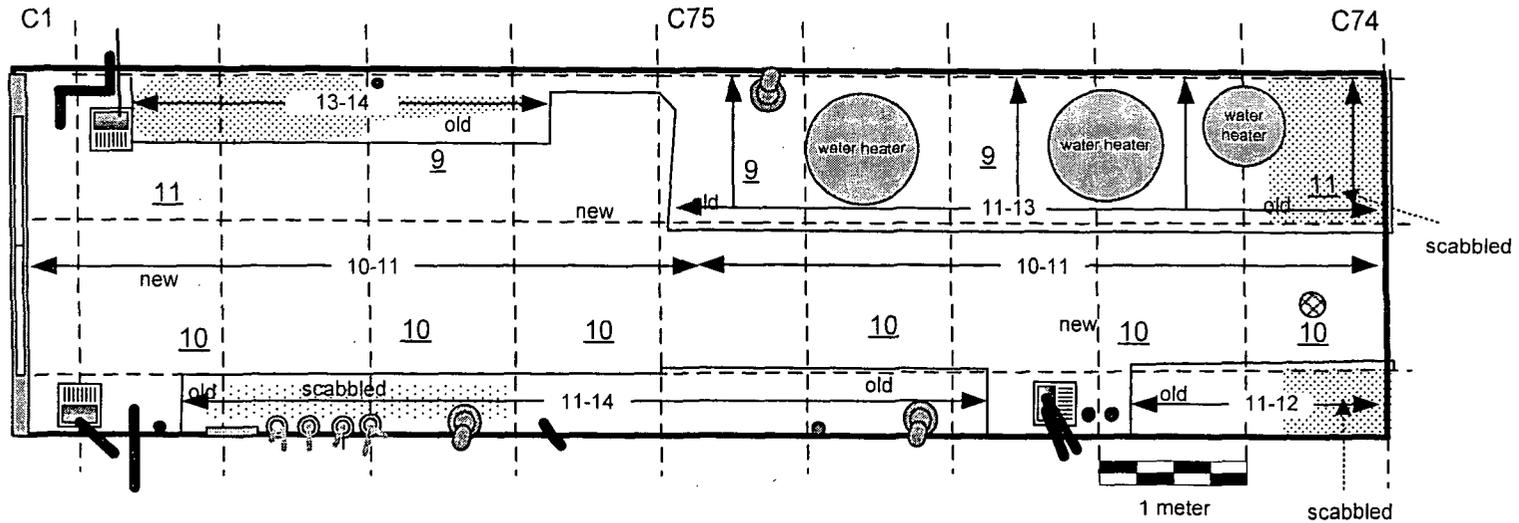
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Date: 02-04-04

Figure 149: Building 2 Service Corridor Section C First (Lowest) Level Floor Column C 74 to C 1  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



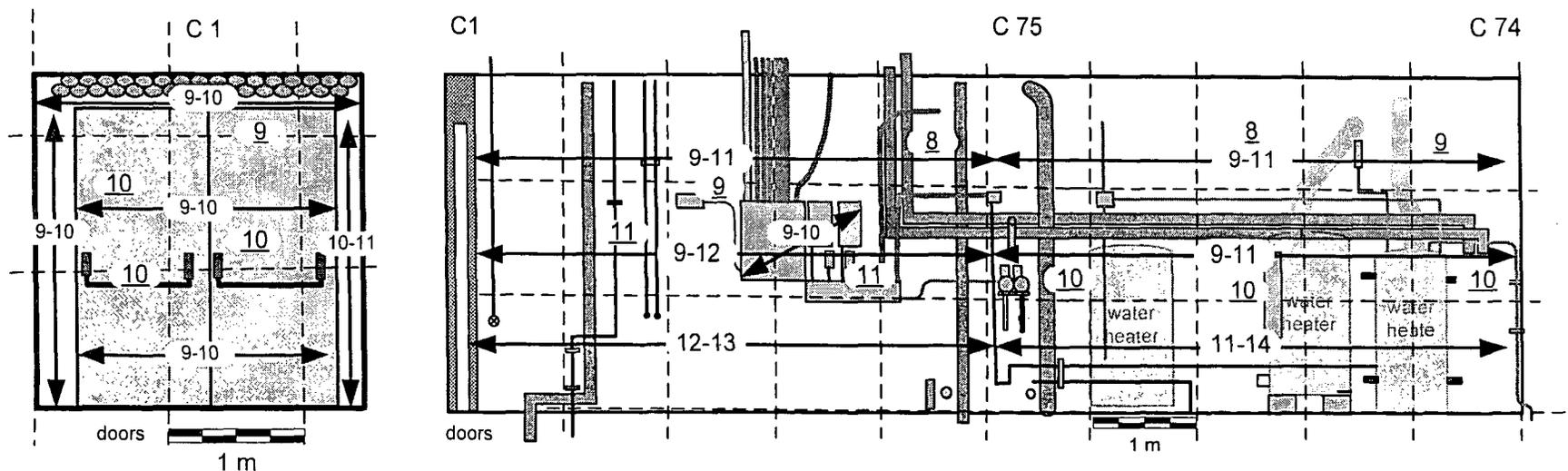
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
 Date: 02-04-04

Figure 150: Building 2 Service Corridor Section C First (Lowest) Level Inner Wall Column C 74 to C 1  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



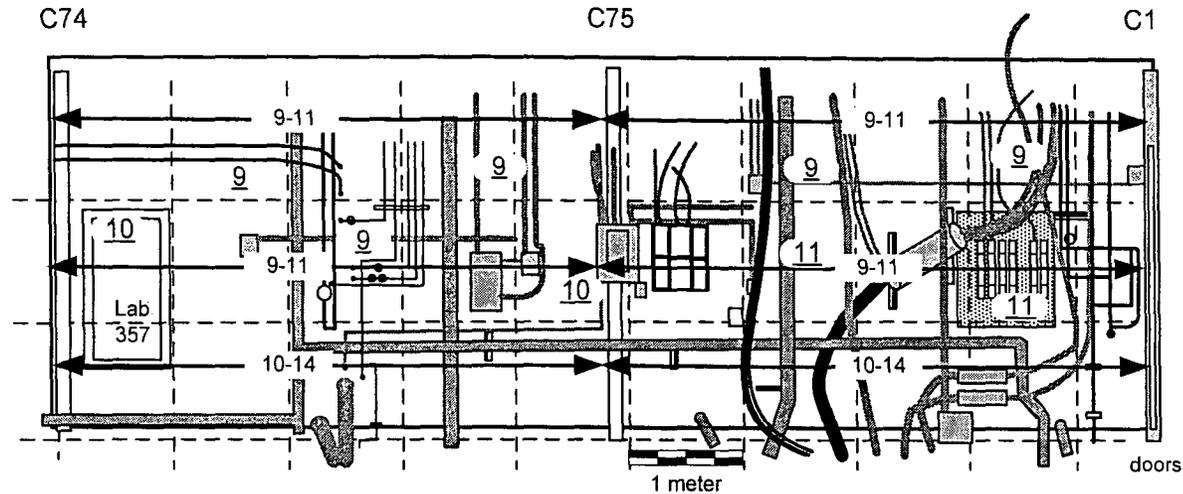
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Dates: 02-04-04 & 02-05-04

Figure 151: Building 2 Service Corridor Section C First (Lowest) Level Outer Wall Column C 74 to C 1  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



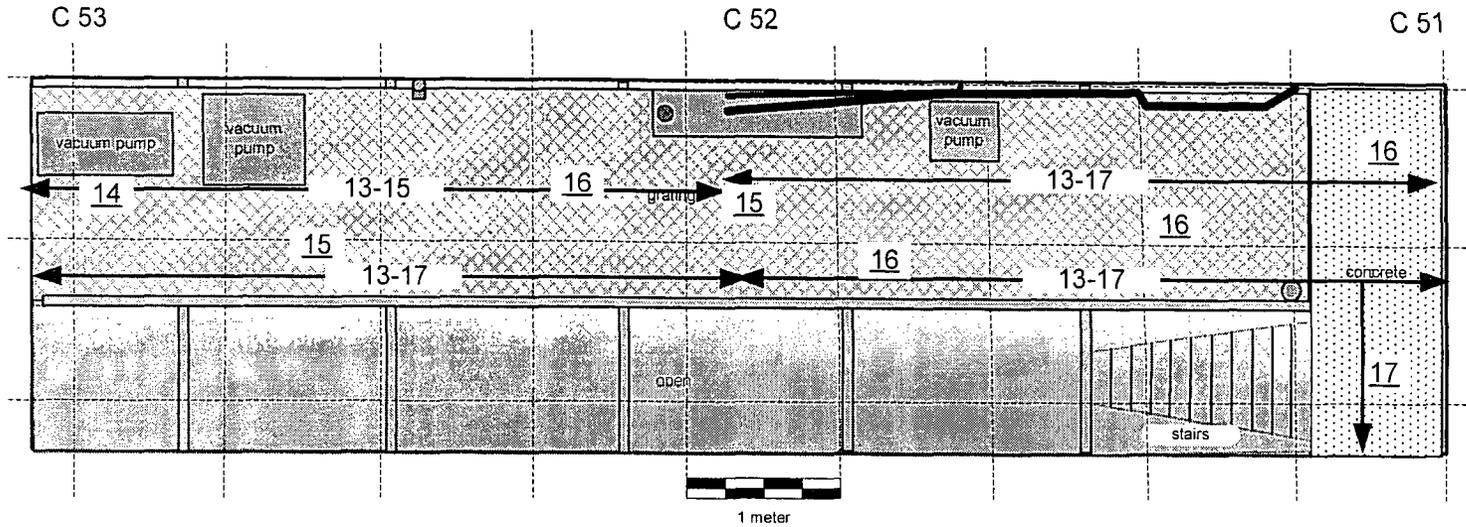
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153590	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155190	
Cal Due Date	02-12-04	
Backgrounds	Contact	@1 meter
Concrete	15-24 $\mu\text{R/hr}$	14-22 $\mu\text{R/hr}$
Cement Block	13-20 $\mu\text{R/hr}$	13-20 $\mu\text{R/hr}$
Metal	9-17 $\mu\text{R/hr}$	13-19 $\mu\text{R/hr}$

Surveys conducted by: G Sayer  
Date: 02-04-04

Figure 152: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 51 to C 53  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



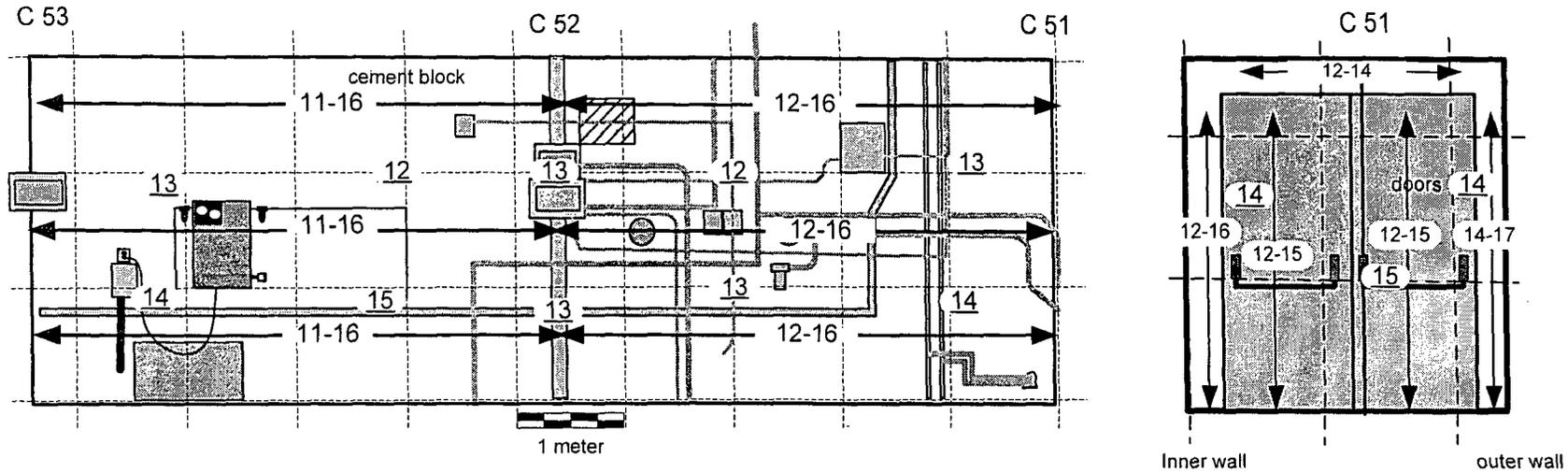
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument	
Model	Ludlum 3
Serial #	153551
Probe	2" X 2" NaI $\gamma$
Probe Serial #	155109
Cal Due Date	05-05-04
Background	contact @1 meter
concrete	15-21
metal	9-13

Surveys conducted by: G. Sayer  
 Date: 02-25-04

Figure 153: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 51 to C 53  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



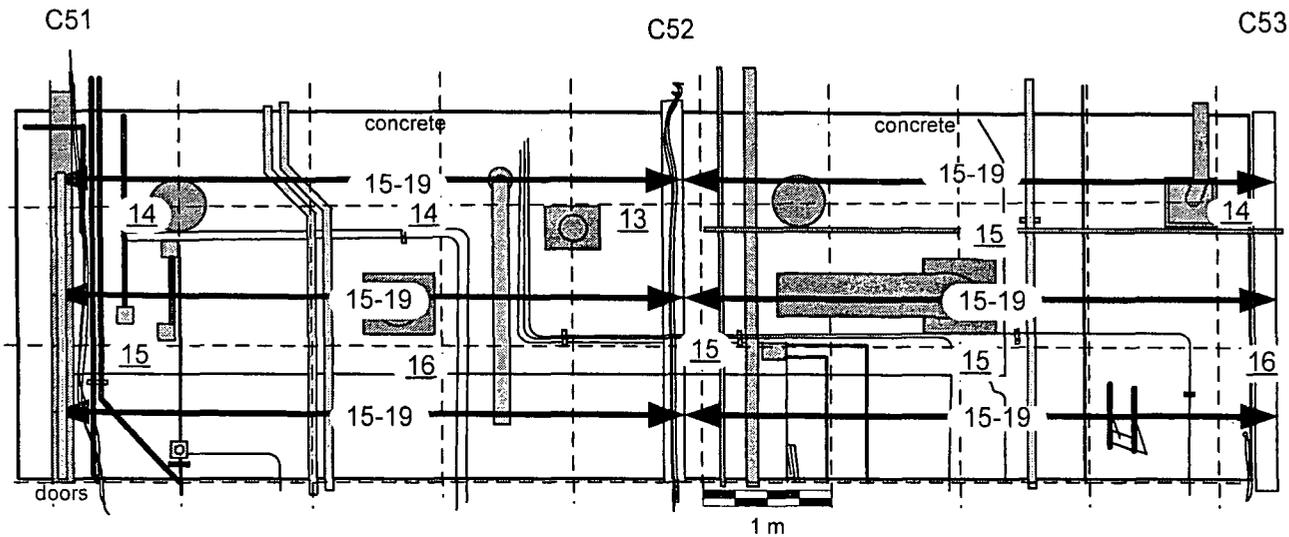
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05 04-08-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: D. Dove & R. Stowell  
Dates: 10-14-04 & 03-22-05

Figure 154: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 51 to C 53  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



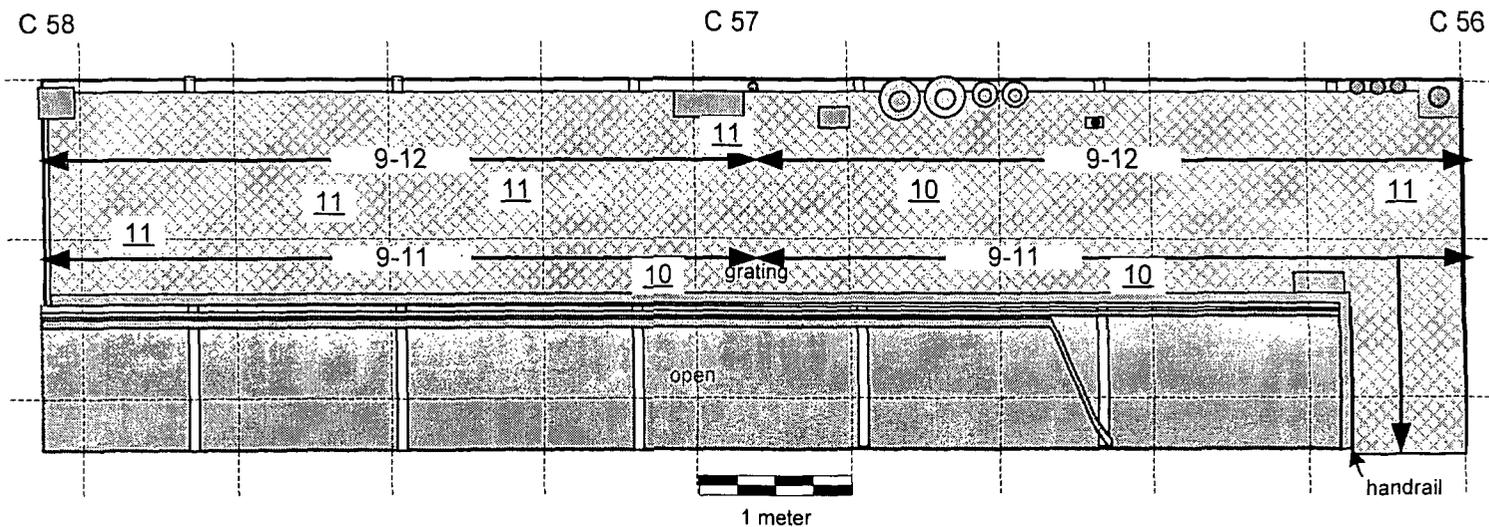
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ◀###▶ Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	Contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Survey conducted by: D. Dove  
Date: 10-14-04

Figure 155: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 56 to C 58  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



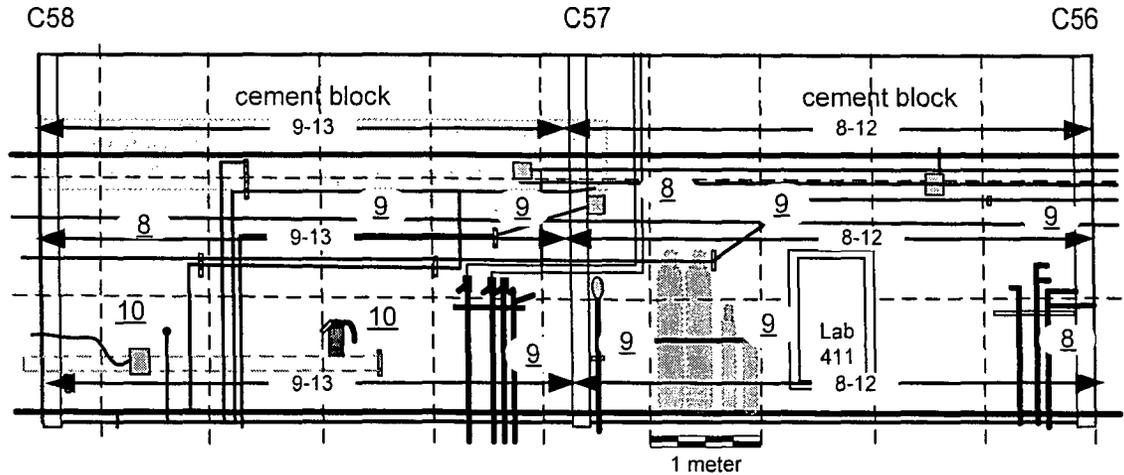
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial #	153551	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	05-05-04	
Background:	contact	@1 meter
metal	9-13	10-13

Surveys conducted by: G. Sayer  
Date: 02-25-04

Figure 156: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 56 to C 58  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



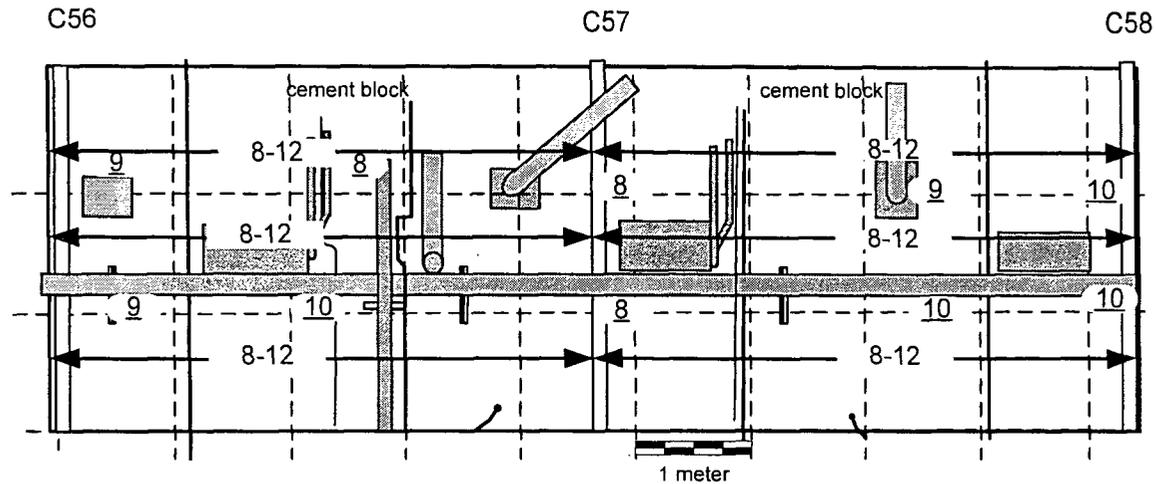
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe/Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds:	contact	@1 meter:
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: D. Dove  
Date: 10-14-04

Figure 157: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 56 to C 58  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



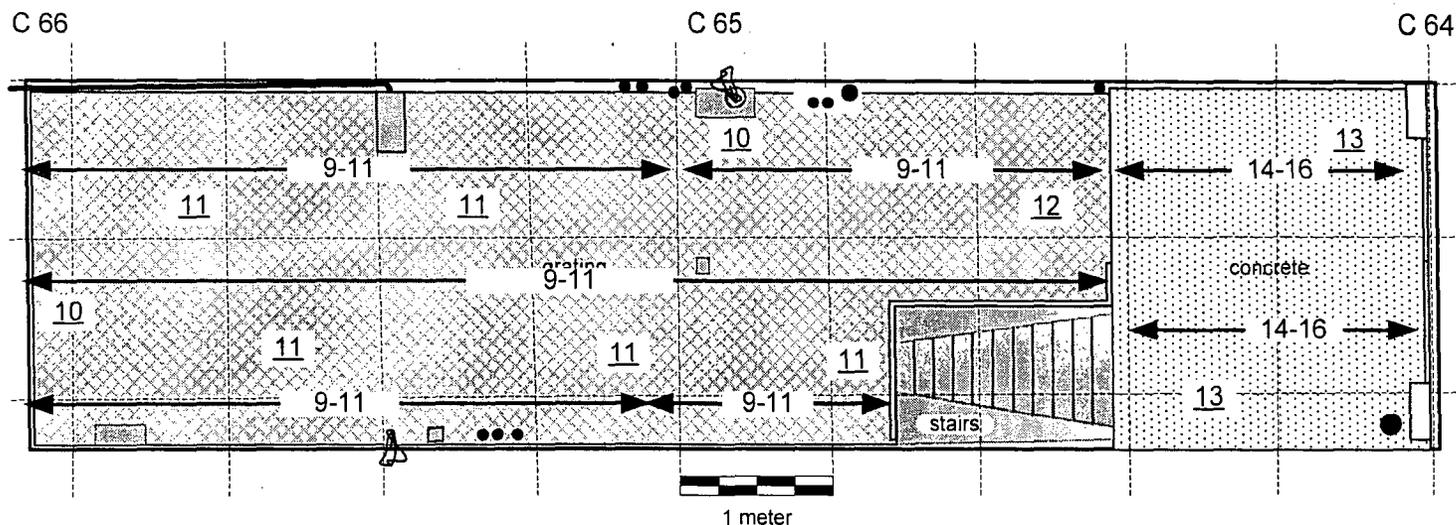
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: D. Dove  
Date: 10-14-04

Figure 158: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 64 to C 66  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



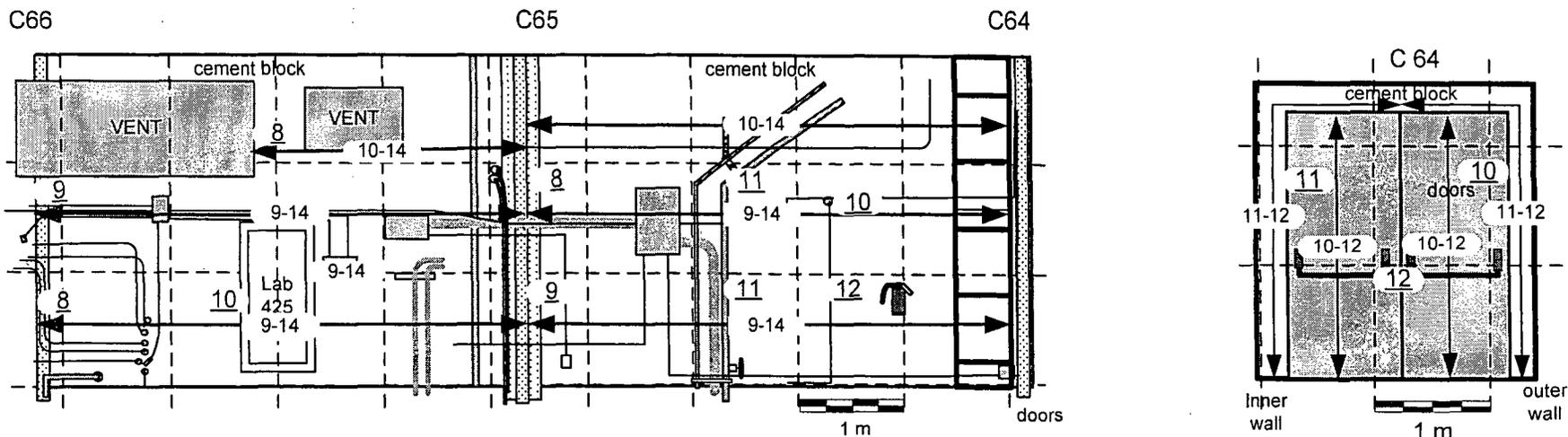
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument		
Model	Ludlum 3	
Serial #	153551	
Probe	2" X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	05-05-04	
Background	contact	@1 meter
concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
Date: 02-25-04

Figure 159: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 64 to C 66  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



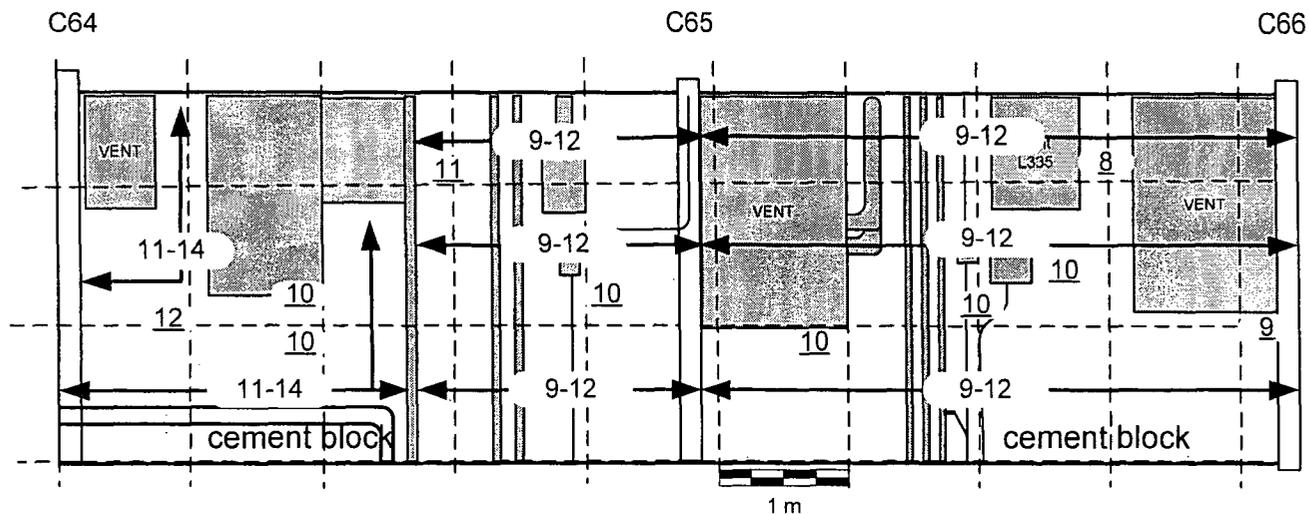
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05 04-08-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by D. Dove & R. Stowell  
Dates: 10-15-04 & 03-22-05

Figure 160: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 64 to C 66  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



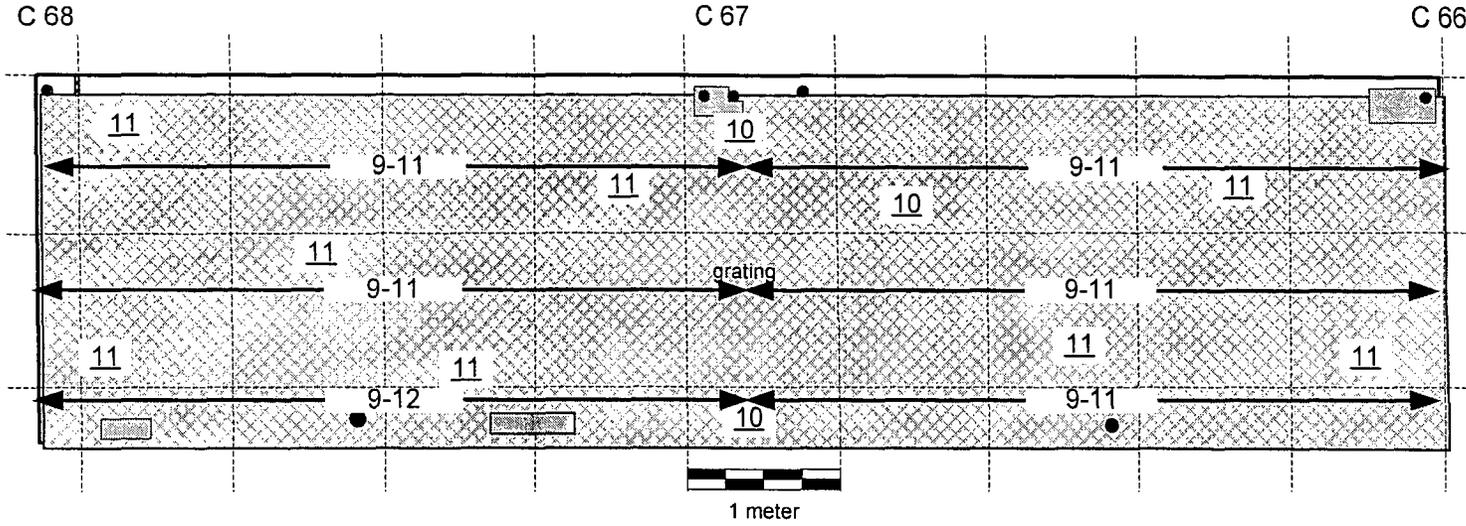
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: D. Dove  
Date: 10-15-04

Figure 161: Building 2 Service Corridor Section C Second (Middle) Level Floor Column C 66 to C 68  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



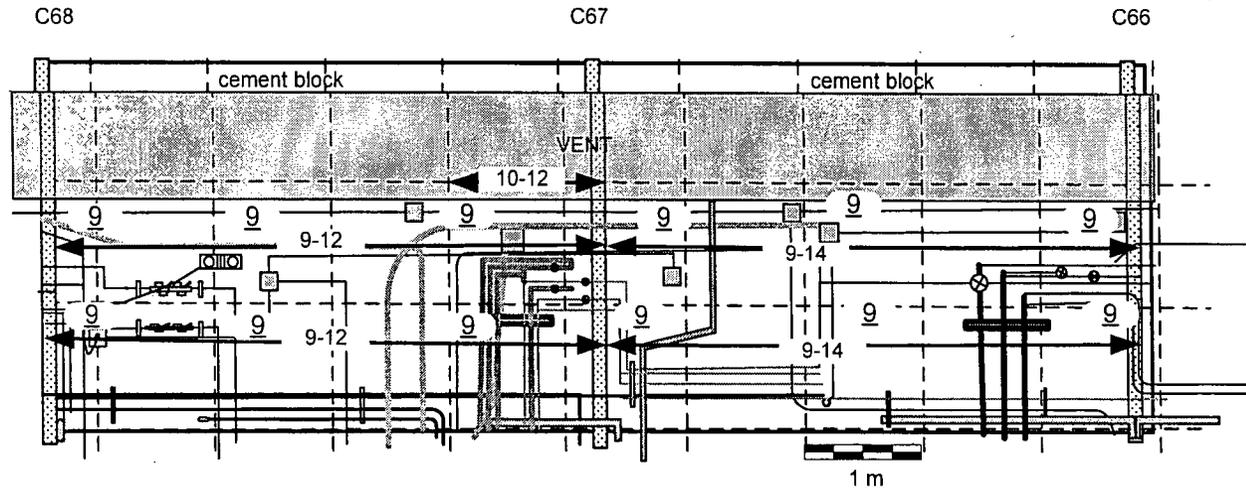
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2.  $\leftarrow \text{###} \rightarrow$  Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument	
Model	Ludlum 3
Serial #	153551
Probe	2" X 2" NaI $\gamma$
Probe Serial #	155109
Cal Due Date	05-05-04
Background	contact @1 meter
concrete	15-21 15-21
metal	9-13 10-13

Surveys conducted by: G. Sayer  
Date: 02-25-04

Figure 162: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C 66 to C 68  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



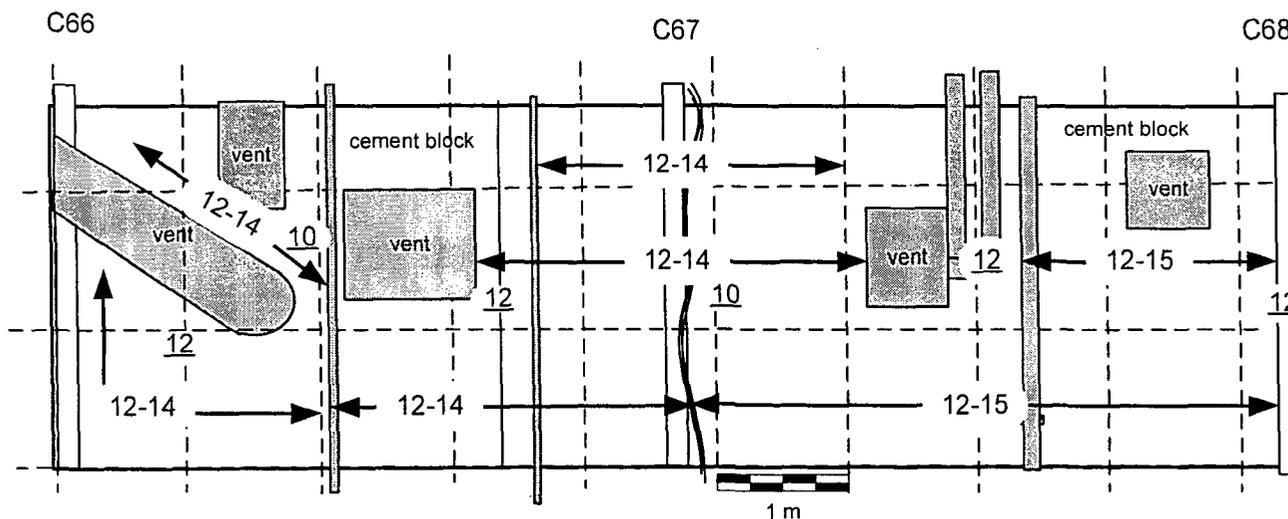
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$ .
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	1013 $\mu\text{R/hr}$

Surveys conducted by: G Sayer & D. Dove  
Dates: 10-19-04 & 10-20-04

Figure 163: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 66 to C 68  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



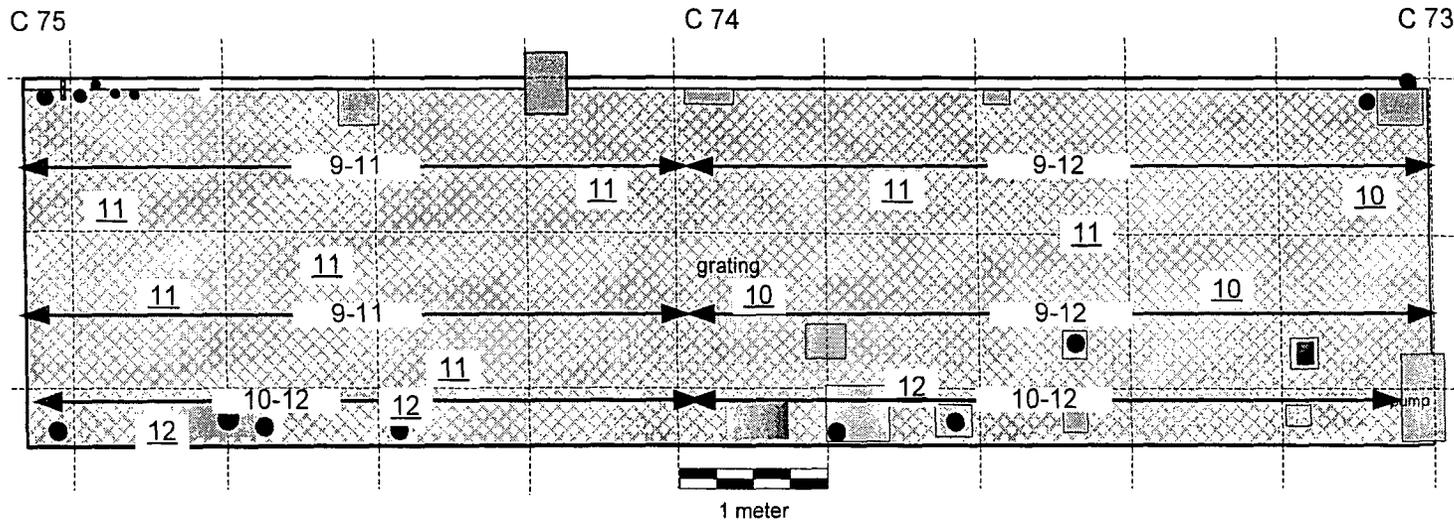
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	1013 $\mu\text{R/hr}$

Surveys conducted by: G Sayer & D. Dove  
Date: 10-21-04

Figure 164: Building 2 Service Corridor Section C Second (Middle)) Level Floor Column C 73 to C 75  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



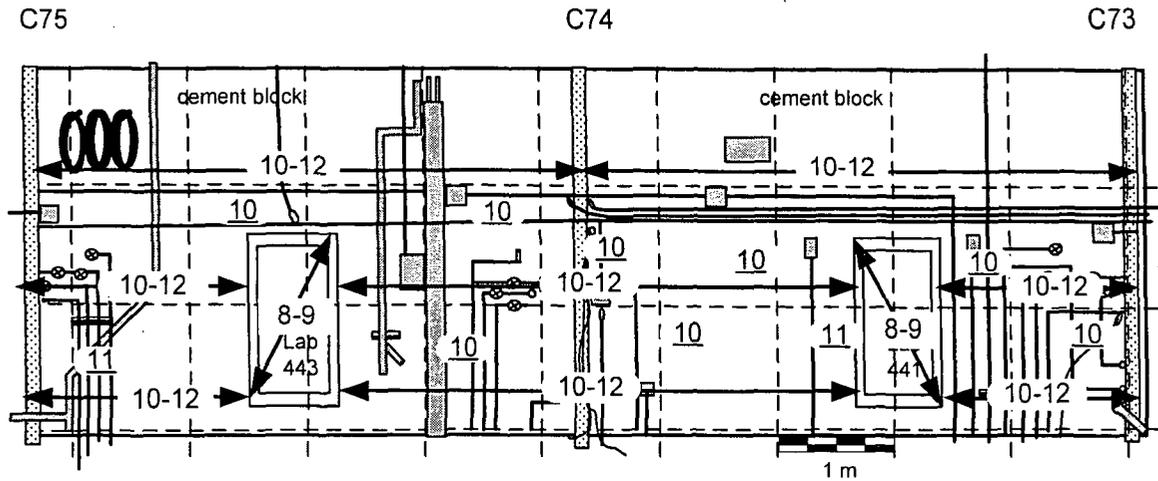
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan range in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned.

Instrument	
Model	Ludlum 3
Serial #	153551
Probe	2" X 2" NaI $\gamma$
Probe Serial #	155109
Cal Due Date	05-05-04
Background	contact @1 meter
metal	9-13 $\mu\text{R/hr}$ 10-13 $\mu\text{R/hr}$

Surveys conducted by: G. Sayer  
Date: 02-25-04

Figure 165: Building 2 Service Corridor Section C Second (Middle) Level Inner Wall Column C73 to C 75  
Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



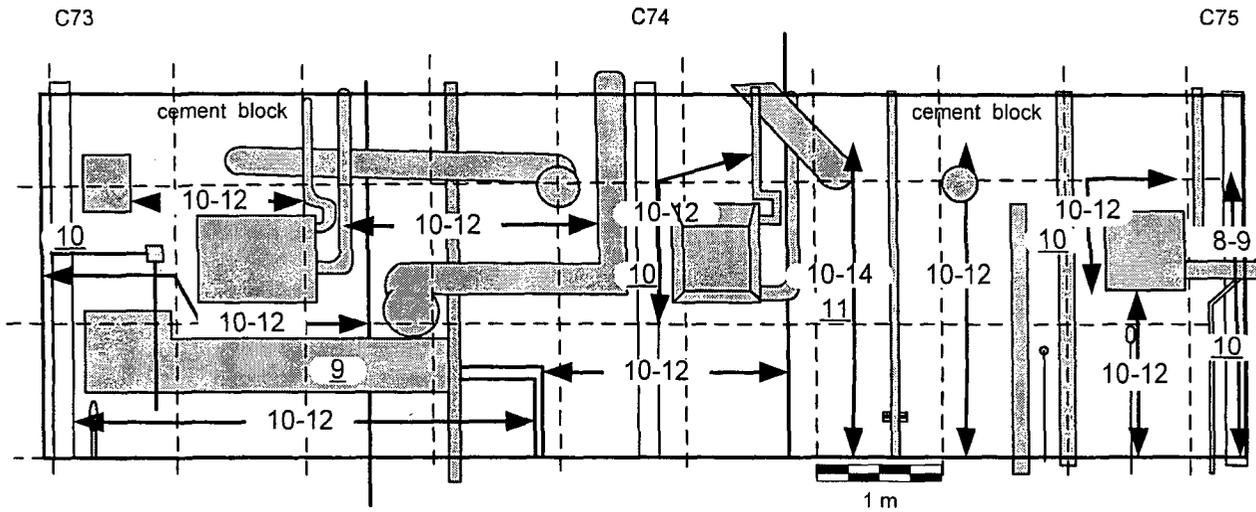
Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe:Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: G Sayer & D. Dove  
Date: 10-22-04

Figure 166: Building 2 Service Corridor Section C Second (Middle) Level Outer Wall Column C 73 to C 75  
 Fixed Exposure Rate and Exposure Rate Scan Measurement Locations and Results



Notes:

1. ## Denotes fixed exposure rate measurement, in  $\mu\text{R/hr}$ , taken @ ~1 meter from the surface.
2. ← ### → Denotes exposure rate surface scan in  $\mu\text{R/hr}$
3. 100% of accessible surfaces scanned 2 meters & below, 10% above 2 meters.

Instrument		
Model	Ludlum 3	
Serial Number	153551	
Probe	2"X 2" NaI $\gamma$	
Probe Serial #	155109	
Cal Due Date	01-06-05	
Backgrounds	contact	@1 meter
Concrete	15-21 $\mu\text{R/hr}$	15-21 $\mu\text{R/hr}$
Cement Block	14-19 $\mu\text{R/hr}$	14-18 $\mu\text{R/hr}$
Metal	9-13 $\mu\text{R/hr}$	10-13 $\mu\text{R/hr}$

Surveys conducted by: G Sayer & D. Dove  
 Date: 10-22-04

**General Atomics<sup>®</sup>**

**Final Radiological Survey Report for the Building 2  
Service Corridor Section "C"**

**Appendix A**

**Final Survey Plans for the Building 2  
Service Corridor Section "C"**

January 17, 2002

Prepared by: Laura Gonzales

*Laura Gonzales* 1/18/02

## **Final Survey Plan for the Building 2 Service Core**

### **Background**

#### **Previous History and Use**

The Service Core is used to provide utilities and other services to the Building 2 laboratories. Occasionally, contaminated equipment was stored in the service core. Additionally, 55 gallon drums were located in the service core which were used to store low levels or radioactively contaminated liquid waste. Previous surveys of the service corridor identified areas of contamination which have since been cleaned.

#### **Exhaust Ducts, Motors and Fans**

Ventilation ducting in the service core were identified in 1994 as being radioactively contaminated (some of these ducts were labeled with "Caution, Radioactive Materials" labels). In February 1994, removal of all radioactively contaminated ducts began and continued until they were all removed. In addition, a plan to inspect all lab exhausts and vents was formulated and surveys began. By May 1994, the surveys were completed. All contaminated ducts and/or exhausters were removed. As a result, no known contamination exists in the ventilation ducts.

#### **Concrete Floor Surveys**

The concrete was removed (after surveys showed it met the release criteria) and placed in GA's Main Site Soil Staging Area (SSA) Bin T-31. The survey results were documented in Figures A-1 through A-10, Figures B-1 through B-10 and Figures C-1 through C-10 of the SSA Bin T-31 release request package. The concrete was removed in order to remove the sewer drain lines.

#### **Sewer Drain Lines**

The sewer drain lines within the service corridor were removed and disposed of as radioactive waste. In addition, the sewer drain "lead outs" to 3 concrete storage vaults were also removed and disposed of as radioactive waste. The concrete storage vaults were decontaminated, as needed, and then released to unrestricted use. A Final Radiological Survey Report was submitted to the NRC and the State of CA in April 2001 summarizing the data collected in the resulting trench along with a request to release the trench to unrestricted use as follows: [Keith Asmussen Letter dated April 4, 2001 to Ms. Mary Adams and Dr. Ronald Rogus (696/CAL-3353) "Request to Release a Certain Portion of General Atomics' Site to Unrestricted Use and Delete it From License: Namely, Building 2 Service Corridor Drain Line Trench"]. The NRC had the lead NRC inspection report dated 10/16/01 was received by GA (70-734/01-03) as well as NRC released per NRC SNM-696 license amendment #72 releasing the trench to unrestricted use. A copy of the inspection report and license amendment was sent to the State on November 28, 2001 as follows: [Keith Asmussen Letter dated November 28, 2001 to Ms. Sudana Kwok (CAL-3422) "Transmittal of Copy of NRC SNM-696 License Amendment No. 72 Which Releases the Following to Unrestricted Use: (1) Building 2

Service Corridor Drain Line Trench and (2) LINAC North Land Area; with a copy of NRC Inspection Report 70-734/01-03"].

After NRC release of the trench to unrestricted use, GA obtained NRC and State of CA approval to backfill the trench with clean soil and to pour new concrete on the surface. This was done in December 2001. *Therefore, the majority of the concrete floor (on the lower level laboratories) is new and does not need to be surveyed (only the edges, ~18" from the each wall).*

#### Prior Decontamination

In addition to the removal of contaminated ventilation ducts and exhausters in 1994, several attempts to survey and decontaminate, as needed, have been made since then.

During implementation of a detailed Survey Plan dated December 8, 1997, approximately 42 contaminated areas were located. Each area was characterized and decontaminated, as needed. Decontamination was accomplished by using a wire brush, needle gun, jack-hammer, or other similar aggressive decontamination methods (including cutting-out grating and disposing it as radioactive waste). Post-decontamination surveys verified that decontamination was successful.

#### Purpose of Survey

This purpose of this Final Plan is to conduct a detailed survey in the Building 2 service core to ensure that the service core now meets the criteria for unrestricted release.

#### Objectives and Responsibility

The purpose of performing a final survey is to demonstrate that the radiological conditions in the service core satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm<sup>2</sup> and (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10  $\mu$ R/hr above background measured at 1 meter above the surface. Samples will be counted in GA's Health Physics laboratory. Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience following approved Health Physics procedures and this Plan. The survey and final report documenting the survey will be performed by GA's Health Physics group.

#### Classification

Based on the fact that decontamination was previously performed, no additional radioactive contamination is expected to be found. Therefore, the service corridor is now classified as a "**non-suspect affected**" area.

**Release Criteria (per GA Site Decommissioning Plan)**

**Concrete Surface**

The applicable guidelines for residual contamination on concrete surfaces is based on the contaminant. At the current time, there is no known radiologically contaminated area within the service corridor. If elevated levels are found above normal background levels, samples will be collected and analyzed in order to determine what the contaminant(s) are and limits applied accordingly as follows:

**Uranium**

5,000 dpm  $\alpha$ /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
15,000 dpm  $\alpha$ /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
1,000  $\alpha$  dpm/100 cm<sup>2</sup>, removable activity

**Gamma Emitters**

5,000 dpm/100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
15,000 dpm/100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
1,000 dpm/100 cm<sup>2</sup>, removable activity

**Sr-90**

1,000 dpm  $\alpha$ /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
3,000 dpm  $\alpha$ /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
200  $\alpha$  dpm/100 cm<sup>2</sup>, removable activity

**Thorium**

1000 dpm/100cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
3000 dpm/100cm<sup>2</sup>, maximum in a 100 cm<sup>2</sup> area if the average over 1 m<sup>2</sup> is met  
200 dpm/100cm<sup>2</sup>, removable activity

As interpreted by the NRC, the average 1000 dpm/100cm<sup>2</sup> and the maximum 3000 dpm/100cm<sup>2</sup> should apply to both alpha and beta measurements, independently, for surface contamination involving natural thorium. ("Interpretation of Thorium Surface Decontamination Limits," U.S. Nuclear Regulatory Commission, February 9, 1992). Thorium emits alpha radiation and beta radiation in a 1:0.67 ratio; therefore, *if beta radiation measurements are used to demonstrate compliance with the release criteria*, the corresponding average and maximum beta activity guidelines are 670 dpm/100cm<sup>2</sup> and 2000 dpm/100cm<sup>2</sup>, respectively.

**Exposure Rate Measurements**

The guideline value for exposure rates measured at 1 m above the surface, is 10  $\mu$ R/hr above background.

### Final Survey Plan

1. **Grid** as needed to properly identify the area and location of measurements.
2. **Exposure Rate Scanning** - Using a microR meter, scan 100% of the *old* floor concrete & 100% of the lower walls. Also, on the second floor, scan 100% of the grating and 100% of the lower walls (if possible).
3. **Conduct a 100% beta survey on the *old* concrete floor and lower walls (below 2 m) using a 434 cm<sup>2</sup> detector (wherever possible).** Check elevated areas using a hand held frisker (15 cm<sup>2</sup> pancake detector) and use the frisker in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
4. **Conduct a 100% alpha survey on the *old* concrete floor using and lower walls (below 2 m) using a 434 cm<sup>2</sup> detector (wherever possible).** Check elevated areas using a hand held 50 cm<sup>2</sup> alpha probe and/or use hand held probe in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
5. **Conduct a 10% beta scan on all accessible walls above 2 m using a 434 cm<sup>2</sup> detector (where ever possible).** Check elevated areas using a hand held frisker (15 cm<sup>2</sup> pancake detector) and use the frisker in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
6. **Conduct a 10% alpha scan on all accessible walls above 2 m using a 434 cm<sup>2</sup> detector (where ever possible).** Check elevated areas using a hand held 50 cm<sup>2</sup> alpha probe and/or use hand held probe in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
- 7.\* **Conduct measurements on the floor & on the lower walls (at 1 m from the floor) – 1 every 4 m**  
**\*For Measurements:**
  - a. Alternate between an alpha fixed measurement, a beta fixed measurement and a smear.
  - b. Use a 50 cm<sup>2</sup> alpha probe for the alpha fixed measurements (~6 sec each).
  - c. Use the 100 cm<sup>2</sup> beta gas flow proportional counter - 2 min each measurement for beta.
  - d. For smears, take a 100 cm<sup>2</sup> wipe.
- 8.\* **Conduct fixed measurement(s)** using the 100 cm<sup>2</sup> beta detector on any location which appears to have been remediated or any similar suspect area (i.e., different color concrete or stained concrete).
9. **Surveys of the Overhead Fixtures** - Do about a 10% survey.
  - ✓ Ventilation Ducts – Conduct scans, fixed beta and alpha measurements and smears
  - ✓ Lights - Conduct scans, fixed beta and alpha measurements and smears
  - ✓ Other Overhead Fixtures and Other Structures – Survey as needed and document.
10. **Exposure Rate Surveys at 1 m from the surface** - every 2 m. On lower and upper level.
11. **Floor Drains** - scan and smear all floor drains. Collect sample if possible.

12. **Grating on Second Floor**

- ✓ Conduct 100% gamma scan using microR meter,
- ✓ Conduct exposure rate measurements every 2 m at 1 m from the surface, and
- ✓ Conduct a measurement (alternate from alpha fixed, beta fixed and smear) 1 every 4 m.

13. **Lower Walls on Second Floor (unaffected)**

- ▶ Conduct 10% gamma scan using microR meter (if accessible)
- ▶ Conduct a measurement (alternate from alpha fixed, beta fixed and smear) 1 every 4 m.

**Alert Levels**

**Alpha Alert Levels**

If the following “alert levels” are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

- > 100 cpm alpha using the large area (434 cm<sup>2</sup>) probe (check area with a hand-held alpha meter).
- > 60 cpm using a 50 cm<sup>2</sup> hand-held alpha probe (~ 600 dpm/100 cm<sup>2</sup>)

**Beta Monitoring**

- >300 cpm above the appropriate background using the 434 cm<sup>2</sup> probe.
- >200 cpm above the appropriate background using the 100 cm<sup>2</sup> probe.
- >150 cpm above background using a portable GM detector.

**Exposure Rate Measurements**

- > 25 µR/hr at surface
- > 20 µR/hr at 1 m

**Beta Alert Levels**

If the following “alert levels” are exceeded, notify HP Management so an evaluation can be performed to determine if increased survey coverage is required or to evaluate if decontamination is required.

**Documentation**

Every survey conducted must be documented on a drawing showing the approximate locations surveyed. Include the results (include units), the technician’s signature, date, instrument(s) used (including model and serial number of both the rate meter and the detector), calibration due date, % efficiency, background readings (if applicable) and any other applicable information.

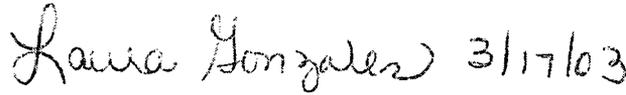
On a weekly basis (on Fridays), provide the surveys to Laura Gonzales for review.

Prepared By:

  
W. T. LaBonte

Date: March 17, 2003

Approved By:

  
Laura Gonzalez 3/17/03

### **Building 2 Service Corridor Final Survey Plan Supplement**

The purpose of this Final Survey Plan Supplement is to provide survey requirements for the "side rooms" adjacent to the service corridor that were not surveyed during the Final Survey, and instructions for the taking of samples in Sections "A", "B", and "C" to determine the isotopic content of residual contamination.

#### **Background**

The Service Corridor is used to provide utilities and other services to the Building 2 laboratories. Occasionally, contaminated equipment was stored in the service corridor. Additionally, 55 gallon drums were located in the service corridor to store low levels of radioactive waste. A final survey for this service corridor was completed in accordance with a Survey Plan issued on January 17, 2002. This plan did not address the side rooms adjacent to the service corridor or the crawl space in the overhead. This supplement to the Final Survey Plan provides the minimum survey requirements for these areas and provides instruction for the sampling of sections "A", "B", and "C" to determine the isotopic content of the residual activity.

#### **Classification**

The service corridor is classified as a "**Non-Suspect Affected**" area. The "side rooms" and overhead have no history of radioactive material use or contamination, therefore, are classified as an "**Unaffected**" area.

#### **Survey Objectives and Responsibility**

The purpose of performing a final survey is to demonstrate that the radiological conditions within the Service Corridor satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm<sup>2</sup> and (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10  $\mu$ R/hr above background measured at 1 meter above the surface. Samples will be counted in the Health Physics laboratory (onsite). Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience. The survey and final report documenting the survey will be performed by GA's Health Physics group.

## Release Criteria (per GA Site Decommissioning Plan)

### Concrete/Asphalt Surface Release Criteria

The NRC release criteria for Sr-90 and Thorium-232, which is conservatively selected for beta measurements, is:

1,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
3,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
200 dpm/100 cm<sup>2</sup>, removable activity

The NRC release criteria for most beta, gamma and Alpha activity (Sr-90 is not an alpha emitter) is:

5,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
15,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
1,000 dpm/100 cm<sup>2</sup>, removable activity

### Exposure Rate Measurements

The guideline value for exposure rates measured at 1 m above the surface, is 10 µR/hr above background.

## Alert Levels

### Alpha Alert Values

If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

- > 100 cpm alpha using the large area (434 cm<sup>2</sup>) probe (check area with a hand-held alpha meter).
- > 60 cpm using a 50 cm<sup>2</sup> hand-held alpha probe (~ 600 dpm/100 cm<sup>2</sup>)

### Beta Monitoring

- >250 cpm above the appropriate background using the 434 cm<sup>2</sup> probe.
- >100 cpm above the appropriate background using the 100 cm<sup>2</sup> probe.
- >40 cpm above background using a portable GM detector. (**Note: this meter should ONLY be used in areas the 434cm<sup>2</sup> or 100 cm<sup>2</sup> probes will not fit).**)

### Exposure Rate Measurements

- > 25 µR/hr at surface
- > 20 µR/hr at 1 m

## Isotopic Determination Sampling

In each of the areas in section "A", "B", and "C" that were marked for additional surveying, remove the markings and enough additional material to fill ½ of a 100 ml container. Record the section and specific area (level and beam number) on the container and transport it to the HP Laboratory for gamma spectroscopy analysis.

### Minimum Survey Requirements

Type of Survey/Activity	Non-Impacted Area
<b>Crawl Space (Overhead)</b>	
Gridding Required?	No
Minimum number of Measurements <sup>(2)</sup> <sup>(3)</sup>	Perform a Large Area wipe of accessible surfaces every 4m. Analyze for $\alpha$ and $\beta$ activity.
$\mu$ R/hr Readings (Scan Survey)	10% scan on all accessible surfaces with detector held ~1" from surface.
$\mu$ R/hr Readings (Fixed Measurements @ 1m from surface)	1 every 4m on accessible surfaces.
<b>Side Rooms</b>	
Gridding Required?	No
Concrete Surfaces <sup>(1)</sup> (Scan w/ 434 cm <sup>2</sup> alpha probe).	10 % on floor and up to 2m on walls.
Concrete Surfaces <sup>(1)</sup> (Scan w/ 434 cm <sup>2</sup> beta probe).	10 % on floor and up to 2m on walls.
Minimum number of Measurements <sup>(2)</sup> <sup>(3)</sup>	1 measurement per 50 m <sup>2</sup> , or, every 7m on floor and walls up to 2m. Alternate between (1) a wipe, (2) an alpha fixed measurement and (3) a beta fixed measurement on <b>concrete surfaces</b> .
$\mu$ R/hr Readings (Scan Survey)	10% scan on all surfaces below 2m with detector held ~1" from surface.
$\mu$ R/hr Readings (Fixed Measurements @ 1m from surface)	1 every 7m on floor and walls up to 2m.

Clean surfaces, debris or dirt removed.

For the fixed measurements:

- For  $\alpha$  measurements; use either the hand held alpha counter (*minimum* of ~6 second count). Document all readings in cpm.
- For  $\beta$  measurements; take a 2 minute count using the 100 cm<sup>2</sup> gas flow proportional detector (beta) with the Model 2221 ratemeter. Document all readings and mark on a drawing the locations the readings were taken.
- For wipes, analyze each 100 cm<sup>2</sup> wipe for  $\alpha$  and  $\beta$  activity.

A "measurement" is either (1) a "fixed" radiation measurement representing total activity or (2) a wipe (removable activity).

Prepared By: W. T. LaBonte *W. T. LaBonte*

Date: January 29, 2004

Approved By:

*Laura Gonzalez 1/29/04*

### **Building 2 Service Corridor Final Survey Plan Supplement-4**

The purpose of this Final Survey Plan Supplement is to provide survey requirements for the locations in section C that had elevated activity requiring decontamination.

#### **Background**

The Service Corridor is used to provide utilities and other services to the Building 2 laboratories. Occasionally, contaminated equipment was stored in the service corridor. Additionally, 55 gallon drums were located in the service corridor to store low levels of radioactive waste. A final survey for this service corridor was completed in accordance with a Survey Plan issued on January 17, 2002. This plan did not address the side rooms adjacent to the service corridor or the crawl space in the overhead. A supplement to the Final Survey Plan, issued in March, 2003, provided the minimum survey requirements for these areas and provides instruction for the sampling of sections "A", "B", and "C" to determine the isotopic content of the residual activity.

During the performance of surveys in accordance with the original survey plan and its supplement, elevated activity levels were discovered in section C of the service corridor that required decontamination. In accordance with the GA Site Decommissioning Plan, if elevated activity is detected in a Non-Suspect Affected Area, the area must re-classified and surveyed accordingly.

#### **Classification**

Section C of the Building 2 Service Corridor is Re- classified as a "Suspect Affected" area in the following locations:

1. First (lowest) level between column numbers C-51 - C-60, C-64 - C-69, and C-74 - C-1 (floor and walls excluding the center 3 feet of the floor)
2. The second level between column C-51 - C-53, C-56 - C-58, C-64 - C-68, and C-73 - C-75. (grating and walls).

## Survey Objectives and Responsibility

The purpose of performing a final survey is to demonstrate that the radiological conditions within the Service Corridor satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm<sup>2</sup> and (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10 µR/hr above background measured at 1 meter above the surface. Samples will be counted in the Health Physics laboratory (onsite). Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience. The survey and final report documenting the survey will be performed by GA's Health Physics group.

### Release Criteria (per GA Site Decommissioning Plan)

#### Concrete/Asphalt Surface Release Criteria

The NRC release criteria for Sr-90 and Thorium-232, which is conservatively selected for beta measurements, is:

1,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
3,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
200 dpm/100 cm<sup>2</sup>, removable activity

The NRC release criteria for most beta, gamma and Alpha activity (Sr-90 is not an alpha emitter) is:

5,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
15,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
1,000 dpm/100 cm<sup>2</sup>, removable activity

#### Exposure Rate Measurements

The guideline value for exposure rates measured at 1 m above the surface, is 10 µR/hr above background.

### Alert Levels

#### Alpha Alert Values

If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

- > 100 cpm alpha using the large area (434 cm<sup>2</sup>) probe (check area with a hand-held alpha meter).
- > 60 cpm using a 50 cm<sup>2</sup> hand-held alpha probe (~ 600 dpm/100 cm<sup>2</sup>)

Beta Monitoring

>250 cpm above the appropriate background using the 434 cm<sup>2</sup> probe.

>100 cpm above the appropriate background using the 100 cm<sup>2</sup> probe.

>40 cpm above background using a portable GM detector. (Note: this meter should ONLY be used in areas the 434cm<sup>2</sup> or 100 cm<sup>2</sup> probes will not fit).

Exposure Rate Measurements

> 25 μR/hr at surface

> 20 μR/hr at 1 m

Minimum Survey Requirements

Type of Survey/Activity	Suspect Affected Area
Gridding Required?	YES (When Possible)
Concrete Surfaces <sup>(1)</sup> (Scan w/ 434 cm <sup>2</sup> alpha probe).	100 % on accessible floor and walls up to 2m high. 10% above 2m. Note: The center 3 feet of the floor on the 1 <sup>st</sup> level is new, therefore it is not included in this classification and does not need to be surveyed.
Concrete Surfaces <sup>(1)</sup> (Scan w/ 434 cm <sup>2</sup> beta probe).	100 % on accessible floor and walls up to 2m high. 10% above 2m. Note: The center 3 feet of the floor on the 1 <sup>st</sup> level is new, therefore it is not included in this classification and does not need to be surveyed.
Minimum number of Measurements <sup>(2)</sup> <sup>(3)</sup>	1 measurement per 4 m <sup>2</sup> (1 every 2m).  Alternate between (1) a wipe, (2) an alpha fixed measurement and (3) a beta fixed measurement on concrete surfaces. Analyze wipes for α and β activity. Note: The center 3 feet of the floor on the 1 <sup>st</sup> level is new, therefore it is not included in this classification and does not need to be surveyed.
μR/hr Readings (Scan Survey)	100% scan on all surfaces below 2m with detector held ~1" from surface, 10% above 2m.  Note: The center 3 feet of the floor on the 1 <sup>st</sup> level is new, therefore it is not included in this classification and does not need to be surveyed.
μR/hr Readings (Fixed Measurements @ 1m from surface)	1 measurement per 4 m <sup>2</sup> (1 every 2m).  Note: The center 3 feet of the floor on the 1 <sup>st</sup> level is new, therefore it is not included in this classification and does not need to be surveyed.

(1) Clean surfaces, debris or dirt removed.

(2) For the fixed measurements:

- For α measurements; use either the hand held alpha counter (*minimum* of ~6 second count). Document all readings in cpm.
- For β measurements; take a 2 minute count using the 100 cm<sup>2</sup> gas flow proportional detector (beta) with the Model 2221 ratemeter. Document all readings and mark on a drawing the locations the readings were taken.
- For wipes, analyze each 100 cm<sup>2</sup> wipe for α and β activity.

(3) A "measurement" is either (1) a "fixed" radiation measurement representing total activity or (2) a wipe (removable activity).

**Documentation**

Every survey conducted must be documented **on a daily basis** on a drawing showing the approximate locations surveyed. Include the results (including units), the technicians signature, date, instrument(s) used (including model and serial number of both the ratemeter and the detector), calibration due date, % efficiency, background readings (if applicable) and any other applicable information.

**Background Measurements**

Background measurements must be made with each instrument used on each type of surface (i.e., concrete, metal, dry wall, etc.) prior to using the instrument.

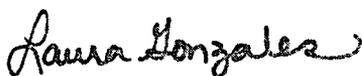
**Instrument Response Checks**

Instrument response checks must be made on a daily basis for each instrument in use, prior to use, to assure the instrument is properly responding to the type of applicable radiation.

January 17, 2002

Revised February 12, 2002

Prepared by: Laura Gonzales



## Final Survey Plan for the Building 2 Service Core

### Background

#### Previous History and Use

The Service Core is used to provide utilities and other services to the Building 2 laboratories. Occasionally, contaminated equipment was stored in the service core. Additionally, 55 gallon drums were located in the service core which were used to store low levels or radioactively contaminated liquid waste. Previous surveys of the service corridor identified areas of contamination which have since been cleaned.

#### Exhaust Ducts, Motors and Fans

Ventilation ducting in the service core were identified in 1994 as being radioactively contaminated (some of these ducts were labeled with "Caution, Radioactive Materials" labels). In February 1994, removal of all radioactively contaminated ducts began and continued until they were all removed. In addition, a plan to inspect all lab exhausts and vents was formulated and surveys began. By May 1994, the surveys were completed. All contaminated ducts and/or exhausters were removed. As a result, no known contamination exists in the ventilation ducts.

#### Concrete Floor Surveys

The concrete was removed (after surveys showed it met the release criteria) and placed in GA's Main Site Soil Staging Area (SSA) Bin T-31. The survey results were documented in Figures A-1 through A-10, Figures B-1 through B-10 and Figures C-1 through C-10 of the SSA Bin T-31 release request package. The concrete was removed in order to remove the sewer drain lines.

#### Sewer Drain Lines

The sewer drain lines within the service corridor were removed and disposed of as radioactive waste. In addition, the sewer drain "lead outs" to 3 concrete storage vaults were also removed and disposed of as radioactive waste. The concrete storage vaults were decontaminated, as needed, and then released to unrestricted use. A Final Radiological Survey Report was submitted to the NRC and the State of CA in April 2001 summarizing the data collected in the resulting trench along with a request to release the trench to unrestricted use as follows: [Keith Asmussen Letter dated April 4, 2001 to Ms. Mary Adams and Dr. Ronald Rogus (696/CAL-3353) "Request to Release a Certain Portion of General Atomics' Site to Unrestricted Use and Delete it From License: Namely, Building 2 Service Corridor Drain Line Trench"]. The NRC had the lead NRC inspection report dated 10/16/01 was received by GA (70-734/01-03) as well as NRC released per NRC SNM-696 license amendment #72 releasing the trench to unrestricted use. A copy of the inspection report and license amendment was sent to the State on November 28, 2001 as follows: [Keith Asmussen Letter dated November 28, 2001 to Ms. Sudana Kwok (CAL-3422) "Transmittal of Copy of NRC SNM-696 License Amendment No. 72 Which Releases the Following to Unrestricted Use: (1) Building 2

Service Corridor Drain Line Trench and (2) LINAC North Land Area; with a copy of NRC Inspection Report 70-734/01-03"].

After NRC release of the trench to unrestricted use, GA obtained NRC and State of CA approval to backfill the trench with clean soil and to pour new concrete on the surface. This was done in December 2001. *Therefore, the majority of the concrete floor (on the lower level laboratories) is new and does not need to be surveyed (only the edges, ~18" from the each wall).*

#### Prior Decontamination

In addition to the removal of contaminated ventilation ducts and exhausters in 1994, several attempts to survey and decontaminate, as needed, have been made since then.

During implementation of a detailed Survey Plan dated December 8, 1997, approximately 42 contaminated areas were located. Each area was characterized and decontaminated, as needed. Decontamination was accomplished by using a wire brush, needle gun, jack-hammer, or other similar aggressive decontamination methods (including cutting-out grating and disposing it as radioactive waste). Post-decontamination surveys verified that decontamination was successful.

#### Purpose of Survey

This purpose of this Final Plan is to conduct a detailed survey in the Building 2 service core to ensure that the service core now meets the criteria for unrestricted release.

#### Objectives and Responsibility

The purpose of performing a final survey is to demonstrate that the radiological conditions in the service core satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm<sup>2</sup> and (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10  $\mu$ R/hr above background measured at 1 meter above the surface. Samples will be counted in GA's Health Physics laboratory. Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience following approved Health Physics procedures and this Plan. The survey and final report documenting the survey will be performed by GA's Health Physics group.

#### Classification

Based on the fact that decontamination was previously performed, no additional radioactive contamination is expected to be found. Therefore, the service corridor is now classified as a "**non-suspect affected**" area (both the lower and the upper levels).

**Release Criteria (per GA Site Decommissioning Plan)**

**Concrete Surface**

The applicable guidelines for residual contamination on concrete surfaces is based on the contaminant. At the current time, there is no known radiologically contaminated area within the service corridor. If elevated levels are found above normal background levels, samples will be collected and analyzed in order to determine what the contaminant(s) are and limits applied accordingly as follows:

**Uranium**

5,000 dpm  $\alpha$ /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
15,000 dpm  $\alpha$ /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
1,000  $\alpha$  dpm/100 cm<sup>2</sup>, removable activity

**Gamma Emitters**

5,000 dpm/100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
15,000 dpm/100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
1,000 dpm/100 cm<sup>2</sup>, removable activity

**Sr-90**

1,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
3,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
200 dpm/100 cm<sup>2</sup>, removable activity

**Thorium**

1000 dpm/100cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
3000 dpm/100cm<sup>2</sup>, maximum in a 100 cm<sup>2</sup> area if the average over 1 m<sup>2</sup> is met  
200 dpm/100cm<sup>2</sup>, removable activity

As interpreted by the NRC, the average 1000 dpm/100cm<sup>2</sup> and the maximum 3000 dpm/100cm<sup>2</sup> should apply to both alpha and beta measurements, independently, for surface contamination involving natural thorium. ("Interpretation of Thorium Surface Decontamination Limits," U.S. Nuclear Regulatory Commission, February 9, 1992). Thorium emits alpha radiation and beta radiation in a 1:0.67 ratio; therefore, *if beta radiation measurements are used to demonstrate compliance with the release criteria*, the corresponding average and maximum beta activity guidelines are 670 dpm/100cm<sup>2</sup> and 2000 dpm/100cm<sup>2</sup>, respectively.

**Exposure Rate Measurements**

The guideline value for exposure rates measured at 1 m above the surface, is 10  $\mu$ R/hr above background.

### Final Survey Plan

1. **Grid** as needed to properly identify the area and location of measurements.
2. **Exposure Rate Scanning** - Using a microR meter, scan 100% of the *old* floor concrete & 100% of the lower walls (lower level only).
3. **Conduct a 100% beta survey on the *old* concrete floor and lower walls (below 2 m) using a 434 cm<sup>2</sup> detector (wherever possible).** Check elevated areas using a hand held frisker (15 cm<sup>2</sup> pancake detector) and use the frisker in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
4. **Conduct a 100% alpha survey on the *old* concrete floor and lower walls (below 2 m) using a 434 cm<sup>2</sup> detector (wherever possible).** Check elevated areas using a hand held 50 cm<sup>2</sup> alpha probe and/or use hand held probe in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
5. **Conduct a 10% beta scan on all accessible walls above 2 m using a 434 cm<sup>2</sup> detector (where ever possible).** Check elevated areas using a hand held frisker (15 cm<sup>2</sup> pancake detector) and use the frisker in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
6. **Conduct a 10% alpha scan on all accessible walls above 2 m using a 434 cm<sup>2</sup> detector (where ever possible).** Check elevated areas using a hand held 50 cm<sup>2</sup> alpha probe and/or use hand held probe in areas where the 434 cm<sup>2</sup> probe cannot be used. Review past data to determine if contaminants have already been identified. If no data found, collect a sample and gamma scan.
- 7.\* **Conduct measurements on the floor & on the lower walls (at 1 m from the floor) – 1 every 4 m**  
**\*For Measurements:**
  - a. Alternate between an alpha fixed measurement, a beta fixed measurement and a smear.
  - b. Use a 50 cm<sup>2</sup> alpha probe for the alpha fixed measurements (~6 sec each).
  - c. Use the 100 cm<sup>2</sup> beta gas flow proportional counter - 2 min each measurement for beta.
  - d. For smears, take a 100 cm<sup>2</sup> wipe.
- 8.\* **Conduct fixed measurement(s)** using the 100 cm<sup>2</sup> beta detector on any location which appears to have been remediated or any similar suspect area (i.e., different color concrete or stained concrete).

9. **Surveys of the Overhead Fixtures** - Do about a 10% survey.
  - ✓ Ventilation Ducts – Conduct scans, fixed beta and alpha measurements and smears
  - ✓ Lights - Conduct scans, fixed beta and alpha measurements and smears
  - ✓ Other Overhead Fixtures and Other Structures – Survey as needed and document.
10. **Exposure Rate Surveys at 1 m from the surface** - every 2 m. On lower and upper level.
11. **Floor Drains** - scan and smear all floor drains. Collect sample if possible.
12. **Grating on Second Floor**
  - ✓ Conduct 100% gamma scan using microR meter,
  - ✓ Conduct 100% beta scan with the 434 cm<sup>2</sup>
  - ✓ Conduct 100% alpha scan with the 434 cm<sup>2</sup>
  - ✓ Conduct a measurement 1 every 4 m (alternate from alpha fixed, beta fixed and smear), and
  - ✓ Conduct exposure rate measurements every 2 m at 1 m from the surface
13. **Lower Walls (< 2m) on Second Floor**
  1. Conduct 10% beta scan with the 434 cm<sup>2</sup> probe (or 100 cm<sup>2</sup> probe)
  2. Conduct 10% alpha scan with the 434 cm<sup>2</sup> probe
    - Note: Where contamination potential exists; e.g., decontaminated walls, discolored wall, conduct additional scans of the area.
  3. Conduct a measurement (alternate from alpha fixed, beta fixed and smear) 1 every 4 m.
14. **Upper Walls (> 2 m) on Second Floor**
  1. Conduct 10% beta scan with the 434 cm<sup>2</sup> probe (or 100 cm<sup>2</sup> probe)
  2. Conduct 10% alpha scan with the 434 cm<sup>2</sup> probe

Note: Check elevated areas using a hand held frisker (15 cm<sup>2</sup> pancake detector) and use the frisker in areas where the 434 cm<sup>2</sup> probe cannot be used.

### Alert Levels

#### Alpha Alert Levels

If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

- > 100 cpm alpha using the large area (434 cm<sup>2</sup>) probe (check area with a hand-held alpha meter).
- > 60 cpm using a 50 cm<sup>2</sup> hand-held alpha probe (~ 600 dpm/100 cm<sup>2</sup>)

#### Beta Monitoring

- >300 cpm above the appropriate background using the 434 cm<sup>2</sup> probe.
- >200 cpm above the appropriate background using the 100 cm<sup>2</sup> probe.
- >150 cpm above background using a portable GM detector.

Exposure Rate Measurements

> 25  $\mu$ R/hr at surface

> 20  $\mu$ R/hr at 1 m

Beta Alert Levels

If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed to determine if increased survey coverage is required or to evaluate if decontamination is required.

Documentation

Every survey conducted must be documented on a drawing showing the approximate locations surveyed. Include the results (include units), the technician's signature, date, instrument(s) used (including model and serial number of both the rate meter and the detector), calibration due date, % efficiency, background readings (if applicable) and any other applicable information.

On a weekly basis (on Fridays), provide the surveys to Laura Gonzales for review.

**General Atomics'**

**Final Radiological Survey Report for the  
Building 2 Service Corridor Section "C"**

**Appendix B**

**Confirmatory Survey Plan and Summary**

**CONFIRMATORY SURVEY PLAN**

Prepared By: W. T. LaBonte

Approved By: Laura Q. Gonzales  
L.Q. Gonzales

### **Building 2 Service Corridor Confirmatory Survey Plan**

The purpose of this Confirmatory Survey Plan Supplement is to verify the radiological conditions identified during the performance of radiological surveys in accordance with the Final Survey Plan(s).

#### **Background**

The Service Corridor is used to provide utilities and other services to the Building 2 laboratories. Occasionally, contaminated equipment was stored in the service corridor. Additionally, 55 gallon drums were located in the service corridor to store low levels of radioactive waste. A final survey for this service corridor was completed in accordance with a Survey Plan issued on January 17, 2002. This plan did not address the side rooms adjacent to the service corridor or the crawl space in the overhead. A supplement to the Final Survey Plan, issued in March, 2003, provided the minimum survey requirements for these areas and provides instruction for the sampling of sections "A", "B", and "C" to determine the isotopic content of the residual activity. During the performance of surveys in accordance with the original survey plan and its supplement, elevated activity levels were discovered in section A of the service corridor that required decontamination. In accordance with the GA Site Decommissioning Plan, if elevated activity is detected in a Non-Suspect Affected Area, the area must re-classified and surveyed accordingly. Following decontamination of elevated activity areas, a fourth supplement to the Final Survey Plan was issued on January 29, 2004.

#### **Classification**

"Suspect Affected" areas) were identified as having elevated radiation levels in Section C.

1. First (lowest) level between column numbers C-51-60, C-64-69, and C-74-C-1 (excluding the center 3 feet of the floor because it is new)
2. The second level between column C-51-53, C-56-58, C-64-68, and C-73-75 (Grating and Walls).

The remaining portions of Section C of the Building 2 Service Corridor were classified as a "Non-Suspect Affected Area".

The "Side Rooms" (heating and air conditioning rooms, electrical shop, elevator shafts, etc.) were classified as "Unaffected Areas".

#### **Survey Objectives and Responsibility**

The purpose of performing this confirmatory survey is to demonstrate that the radiological conditions within the Service Corridor satisfy the NRC and State of CA guidelines for release to

unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm<sup>2</sup> and (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10 µR/hr above background measured at 1 meter above the surface. Samples will be counted in the Health Physics laboratory (onsite). Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience.

### **Release Criteria (per GA Site Decommissioning Plan)**

#### **Concrete/Asphalt Surface Release Criteria**

The NRC release criteria for Sr-90 and Thorium-232, which is conservatively selected for beta measurements, is:

1,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
 3,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
 200 dpm/100 cm<sup>2</sup>, removable activity

The NRC release criteria for most beta, gamma and Alpha activity (Sr-90 is not an alpha emitter) is:

5,000 dpm /100 cm<sup>2</sup>, averaged over a 1 m<sup>2</sup> area  
 15,000 dpm /100 cm<sup>2</sup>, total, maximum in a 100 cm<sup>2</sup> area  
 1,000 dpm/100 cm<sup>2</sup>, removable activity

#### **Exposure Rate Measurements**

The guideline value for exposure rates measured at 1 m above the surface, is 10 µR/hr above background.

### **Alert Levels**

#### **Alpha Alert Values**

If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

- > 100 cpm alpha using the large area (434 cm<sup>2</sup>) probe (check area with a hand-held alpha meter).
- > 60 cpm using a 50 cm<sup>2</sup> hand-held alpha probe (~ 600 dpm/100 cm<sup>2</sup>)

#### **Beta Monitoring**

- >250 cpm above the appropriate background using the 434 cm<sup>2</sup> probe.
- >100 cpm above the appropriate background using the 100 cm<sup>2</sup> probe.
- >40 cpm above background using a portable GM detector.

#### **Exposure Rate Measurements**

- > 25 µR/hr at surface
- > 20 µR/hr at 1 m

## Minimum Survey Requirements

Type of Survey/Activity	Non-Suspect Affected Area	Suspect Affected Area
Gridding Required?	Not Required	YES (as established during final survey)
Concrete Surfaces <sup>(1)</sup> (Alpha Scan)	No Survey Required	On the Lower Level <u>ONLY</u> , 10 % on accessible floor (excluding the center of the floor which is new, only survey approximately 6" from each wall) and walls up to 2m high.
Concrete Surfaces <sup>(1)</sup> (Beta Scan)	Perform a 10% scan of original flooring and 10% scan of walls.	On the Lower Level <u>ONLY</u> , 10 % on accessible floor (excluding the center of the floor which is new, only survey approximately 6" from each wall) and walls up to 2m high.
Minimum number of Measurements <sup>(2)</sup> <sup>(3)</sup>	Spot check a minimum of 10 locations for fixed beta activity	Scan each of the remediated areas with a beta instrument. Taken at least one (1) fixed alpha, one (1) fixed beta in the area with the highest scan results in each remediated area. <b>This applies to all three (3) levels.</b>
$\mu$ R/hr Readings (Scan Survey)	No Survey Required	On the Lower Level <u>ONLY</u> , 10% scan on all surfaces below 2m (excluding the center of the floor which is new) with detector held ~1" from surface.
$\mu$ R/hr Readings (Fixed Measurements @ 1m from surface)	On the Lower Level <u>ONLY</u> , take 1 measurement every 10 m, in the center of the walkway, with the instrument held 1 m from the floor.	

(1) Clean surfaces, debris or dirt removed.

(2) For the fixed measurements:

- For  $\alpha$  measurements; use either the hand held alpha counter (*minimum* of ~6 second count). Document all readings in cpm.
- For  $\beta$  measurements; take a 2 minute count using the 100 cm<sup>2</sup> gas flow proportional detector (beta) with the Model 2221 ratemeter. Document all readings and mark on a drawing the locations the readings were taken.
- For wipes, analyze each 100 cm<sup>2</sup> wipe for  $\alpha$  and  $\beta$  activity.

(3) A "measurement" is either (1) a "fixed" radiation measurement representing total activity or (2) a wipe (removable activity).

**CONFIRMATORY SURVEY SUMMARY**

## Appendix B

### Building 2 Service Corridor "Section C" Confirmatory Survey Summary

#### Description

In October and November 2004, GA conducted an internal confirmatory survey of Section C of the Building 2 Service Corridor in accordance with a written plan (provided in this Appendix). The purpose of this survey was to determine if the final survey results effectively reflect the radiological conditions for this area. Following a review of the data collected, it was determined that the data, as documented by the surveyors, did not satisfy all of the survey requirements identified in the confirmatory survey plan. In March, 2006, portions of the confirmatory survey that appeared to be missing from the earlier effort, namely, Alpha and Beta scans with a 434 cm<sup>2</sup> proportional detector and fixed measurements in areas previously remediated, were performed.

The results of the confirmatory survey performed in October/November 2004 are as follows:

#### Exposure Rate Surface Scans and Results

100% of the "old" flooring and 10% of the walls on the lowest level (Level 1) were scanned with a 2" x 2" NaI (TI) detector held within 1" of the surface. The Results ranged from 18 to 27  $\mu\text{R/hr}$  on the "old" flooring. On the Second Level, 100% of the flooring and 10% of the walls were scanned with a 2"x 2" NaI (TI) detector held within 1" of the surface. The results were at natural background levels. In the Crawl Space (the 3<sup>rd</sup> level), 100% of the accessible walkways were scanned with a 2" x 2" NaI (TI) detector held within 1" of the surface. The results ranged from 6 to 12  $\mu\text{R/hr}$ . These results are not distinguishable from natural background measurements in enclosed concrete spaces similar to this corridor. See attached Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 for locations and results.

#### Fixed Exposure Rate Measurements

Fixed exposure rate measurements were taken at 1 meter from the floor in decontaminated (scabbled) areas on the first level. The highest result was 25  $\mu\text{R/hr}$  at column C-66 to C-67. This result is natural background for a concrete enclosed area similar to this service corridor. See attached Figures 3, 4, and 5 for locations and results.

#### Alpha and Beta Scanning

10% of the "flooring and 10% of the accessible walls, and, all of the previously decontaminated (scabbled) areas, were scanned with 50 cm<sup>2</sup> gas flow proportional alpha and 15 cm<sup>2</sup> GM beta detectors held within 1" of the surface on the first and second levels. 10% of the "flooring" on the third level was scanned with 50 cm<sup>2</sup> gas flow proportional alpha and 15 cm<sup>2</sup> GM beta detectors held within 1" of the surface. The alpha results were all at natural background levels. The highest beta result was 100 cpm, which is less than the MDA for the detector used. See attached Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 for locations and results.

#### Removable Contamination (wipe) Surveys

Eight (8) wipe samples were collect on the first level and analyzed for  $\alpha$  and  $\beta$  activity. All results were at natural background levels. See attached Figures 1, 2, 3, 4, and 5 for locations and results.

The additional measurements taken in March 2006 are as follows:

#### Alpha and Beta Scanning

10% of the original concrete floor surfaces on the first (lowest) level and 10% of the floor gating surfaces on the second level were scanned with 434 cm<sup>2</sup> gas flow proportional detectors held within 1' of the surface. All Alpha measurement results were at natural background levels. The highest Beta measurement result was 2400 cpm, which equates to 569 dpm/100 cm<sup>2</sup>. This is far less than the NRC- and State- approved release criteria. See Figures 1a, 2a, 3a, 4a, 5a, 6a, 7a, 8A, 9a, and 10a for locations and results.

#### Fixed Measurements

Twenty-four (24) Alpha and twenty-four (24) Beta fixed measurements were taken on the first (lowest) level in locations that had been remediated in the past. In addition, nine (9) Alpha and nine (9) Beta fixed measurements were taken in random locations on the second level. All Alpha measurement results, on both levels, were at natural background activity levels. The highest Beta measurement on the first level was 1404 cp2m, which is 550 dpm/100 cm<sup>2</sup>. This is far below the NRC- and State- approved release criteria. See Figures 1a, 2a, 3a, 4a, 5a, 6a, 8a, 9a, and 10a for locations and results.

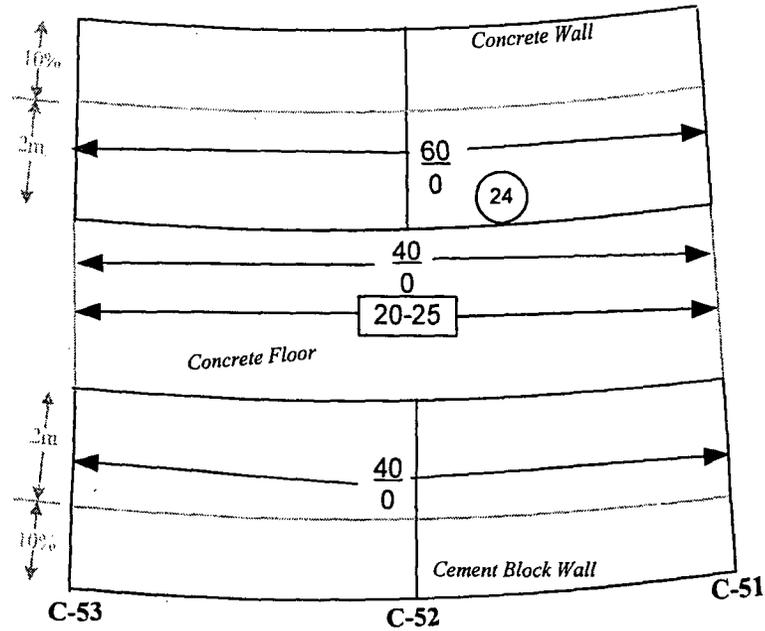
#### Removable Activity

An additional nineteen (19) wipe samples were collected in random locations on the second and third levels of Section C portion of the Building 2 service corridor. All samples collected were analyzed for Alpha and Beta activity in the Health Physics laboratory. All results were not discernible from natural background activity levels. See Figures 6a, 7a, 8a, 9a, 10a, 11, 12, 13, 14, and 15 for locations and results.

#### Conclusion

All of the Confirmatory Survey results indicated that the activity and radiation levels were all below approved release criteria for the Building 2 Service Corridor, "Section C" and were well in agreement with the results of the Final Survey performed on this site.

Figure 1: Building 2 Service Corridor, Section C, Level 1, Column C-51 to C53, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

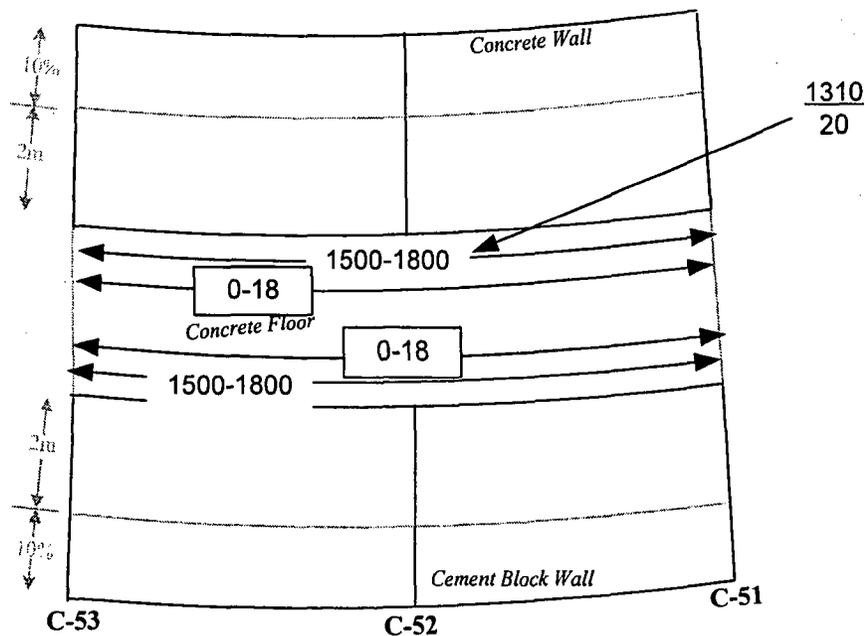
(#) = Wipe Survey Location

C# = Column Number

Note: all wipes were analyzed for  $\alpha$  and  $\beta$  activity, all results were at natural background levels.

Building 2 Service Corridor			
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ , $\beta$ , $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 1a: Building 2 Service Corridor, Section C, Level 1, Column C-51 to C53, Confirmatory Survey



**LEGEND**

##-## =  $\beta$  Surface Scan in cpm, 10% of surface

# =  $\alpha$  Surface Scans in cpm, 10% of surface

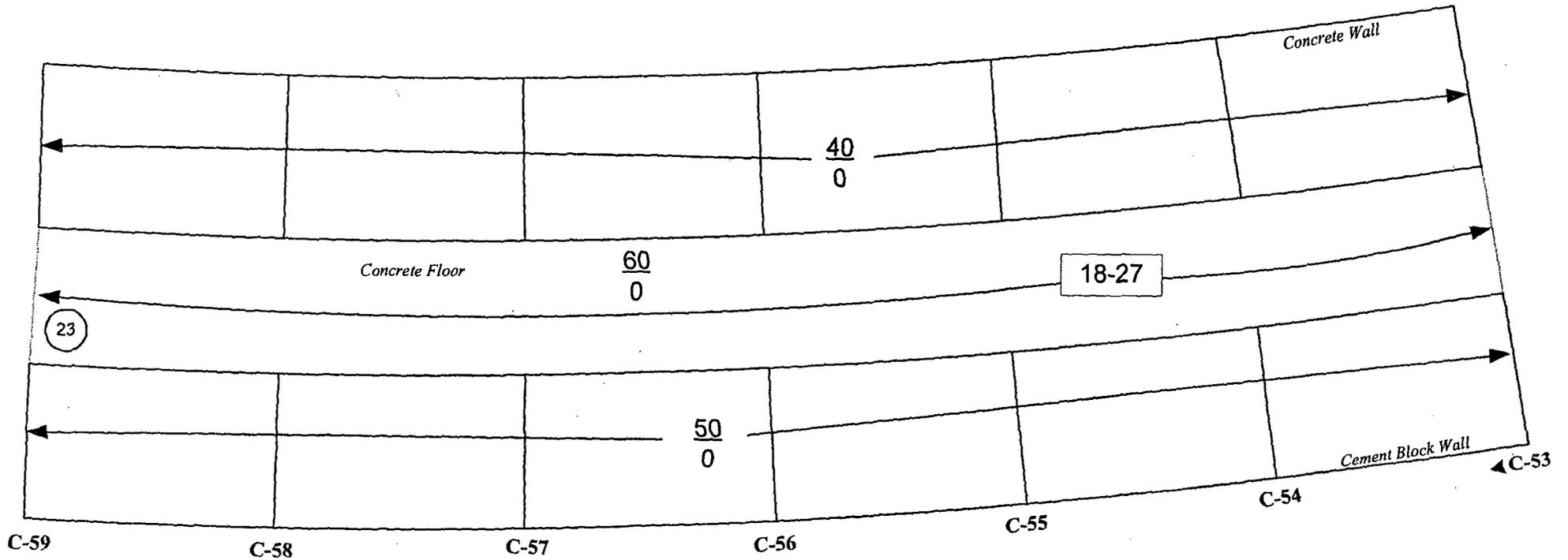
## =  $\beta$  Fixed measurement in cp2m

## =  $\alpha$  Fixed measurement in cpm

B# = Column Number

Building 2 Service Corridor					
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39%	34.36%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm.	1300-2000 cpm	1026 cp2m
MDA in DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 2: Building 2 Service Corridor, Section C, Level 1, Column C-53 to C-59, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

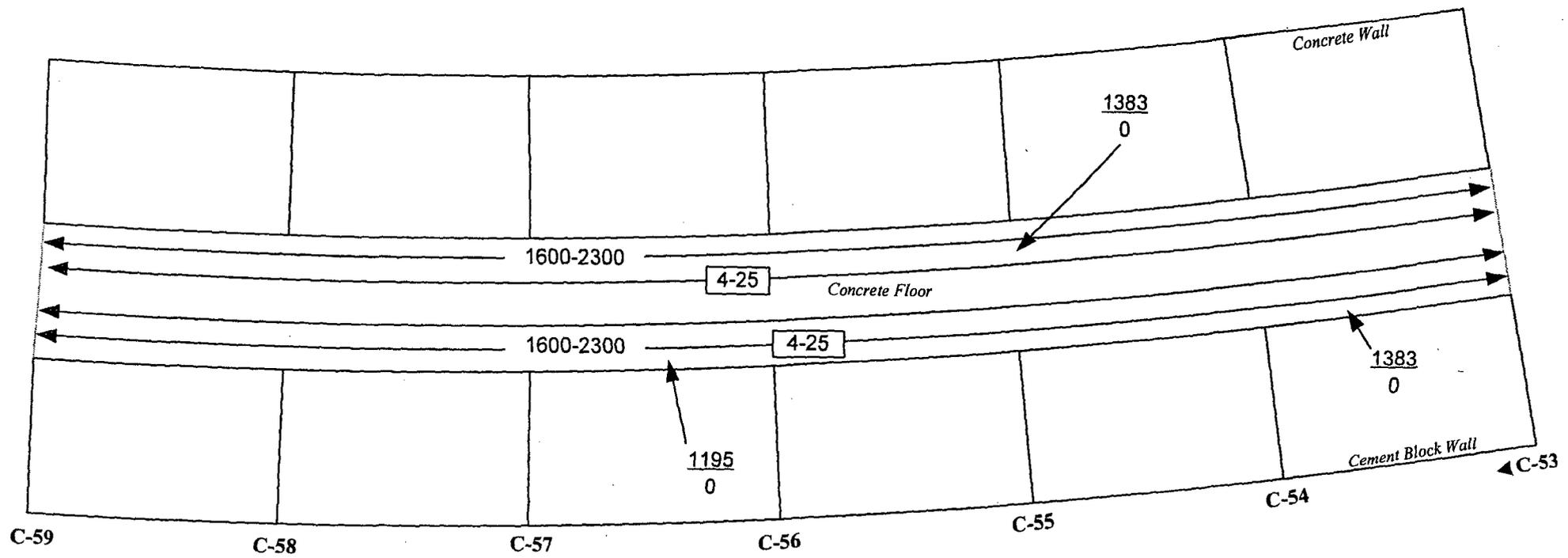
# = Wipe Survey Location

C# = Column Number

Note: all wipes were analyzed for  $\alpha$  and  $\beta$  activity, all results were at natural background levels.

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
Efficiency	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in $\text{CPM}/100 \text{ cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan Dates: 10-08-04 to 11-12-04			

Figure 2a: Building 2 Service Corridor, Section C, Level 1, Column C-53 to C-59, Confirmatory Survey

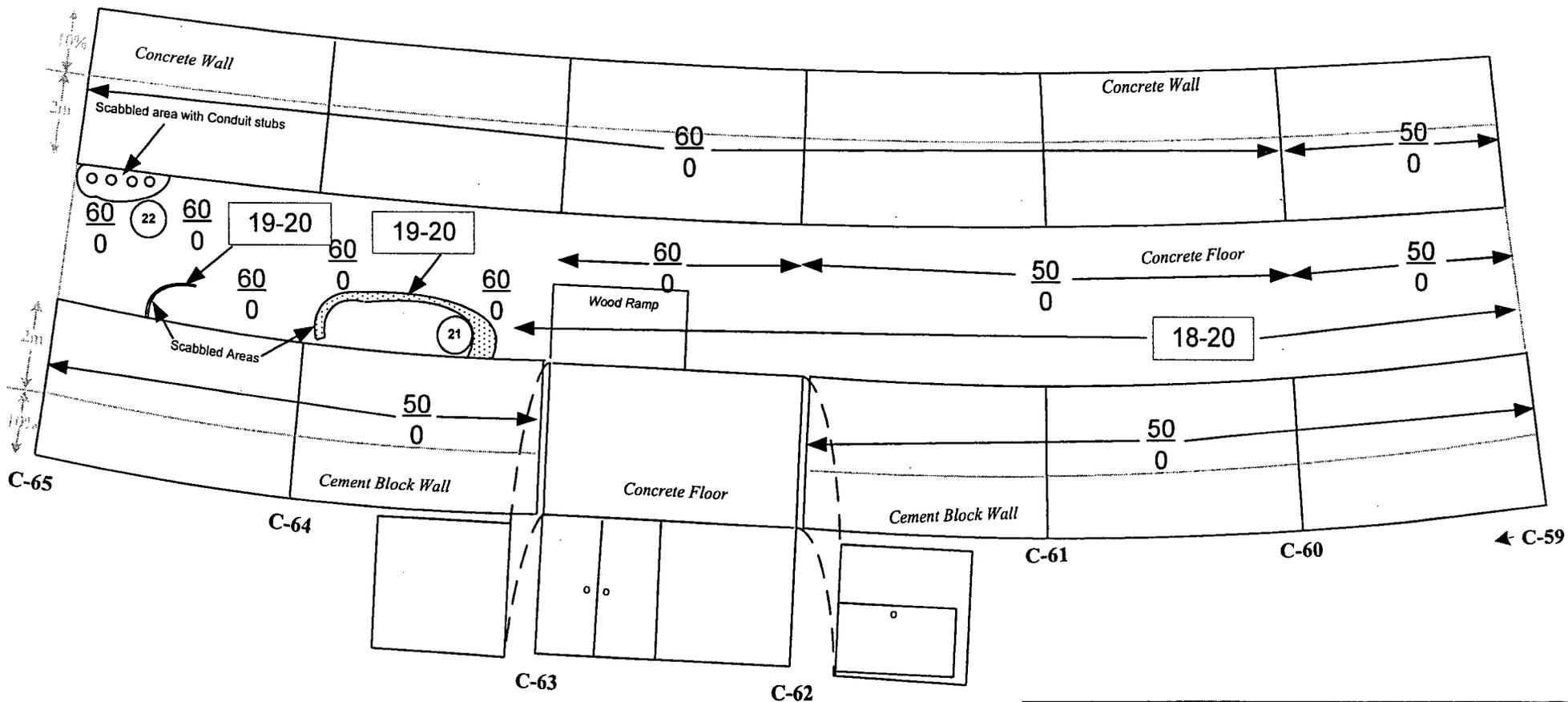


**LEGEND**

- ##-## =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Location	Building 2 Service Corridor				
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39%	34.36%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 3: Building 2 Service Corridor, Section C, Level 1, Column C-59 to C-65, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

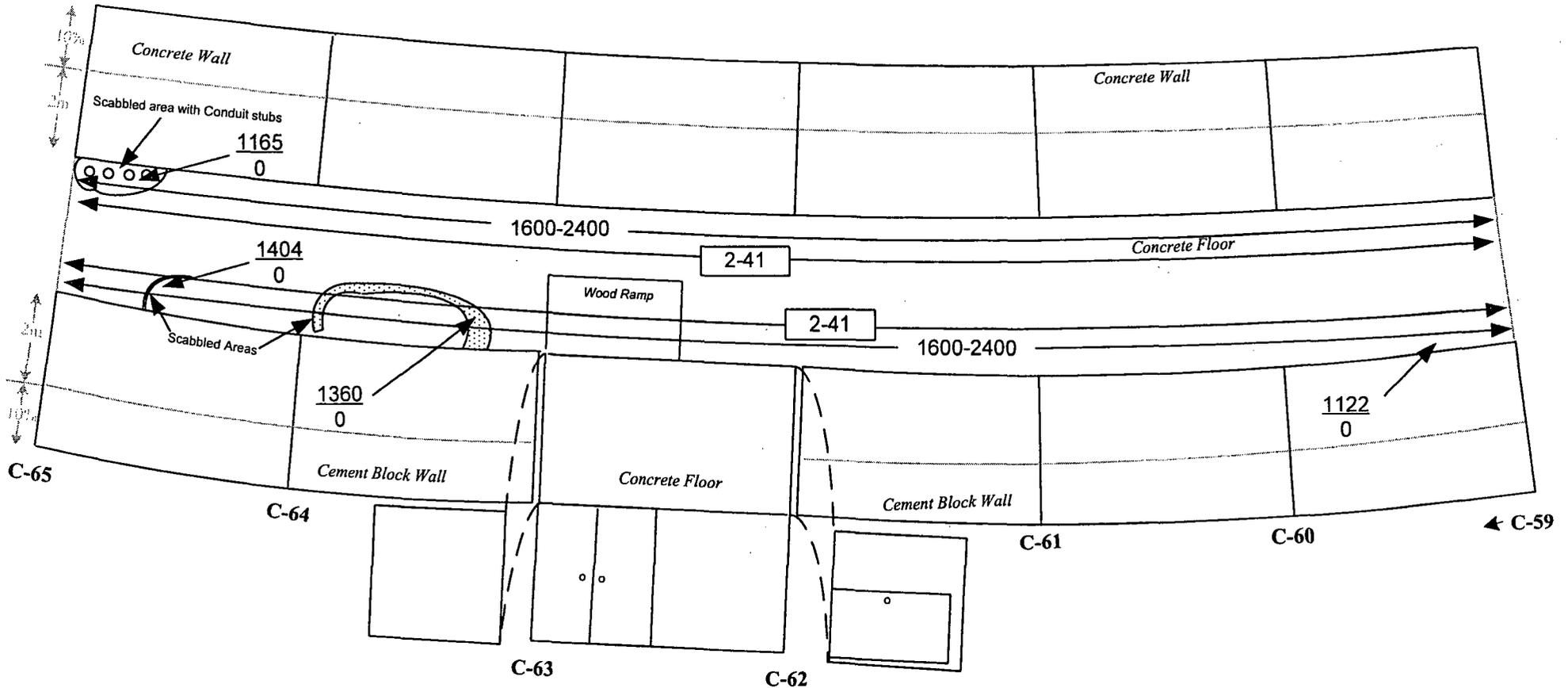
⊙ = Wipe Sample Location

B# = Column Number

All wipes were analyzed for  $\alpha$  and  $\beta$  activity, all results were at natural background levels.

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 3a: Building 2 Service Corridor, Section C, Level 1, Column C-59 to C-65, Confirmatory Survey

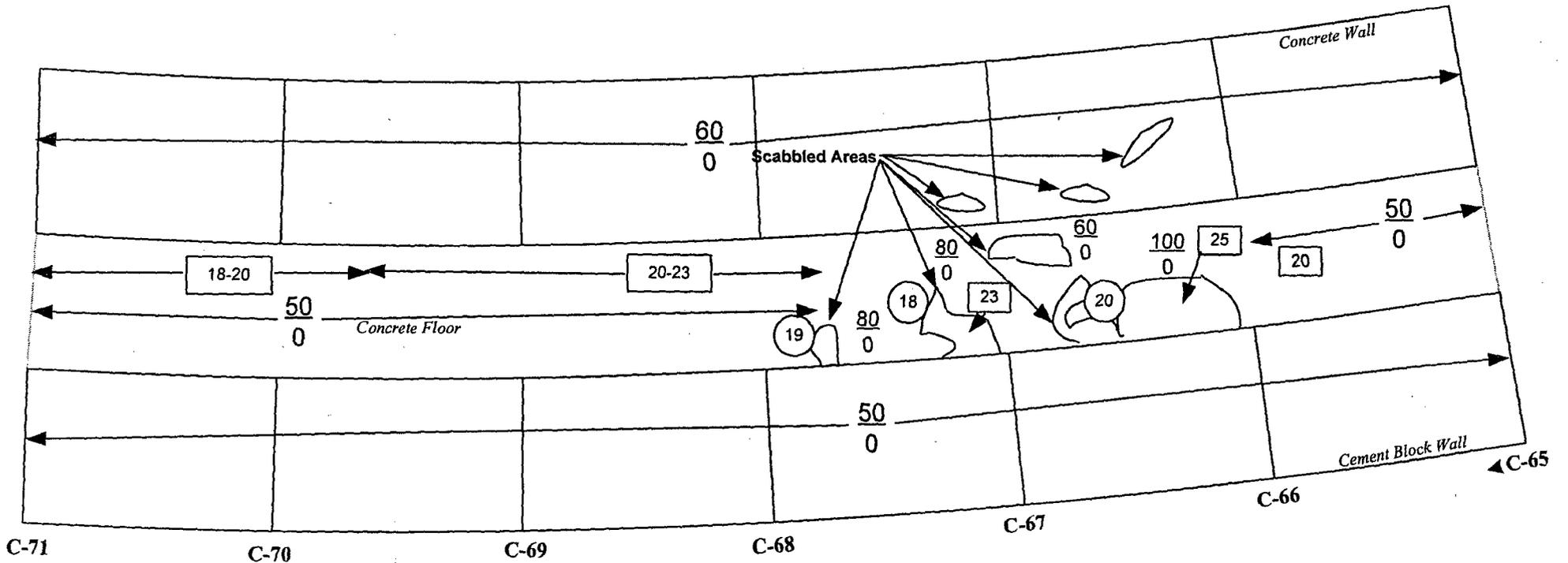


**LEGEND**

- ### =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Location	Building 2 Service Corridor				
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39%	34.36%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA In DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 4: Building 2 Service Corridor, Section C, Level 1, Column C-65 to C-71, Confirmatory Survey



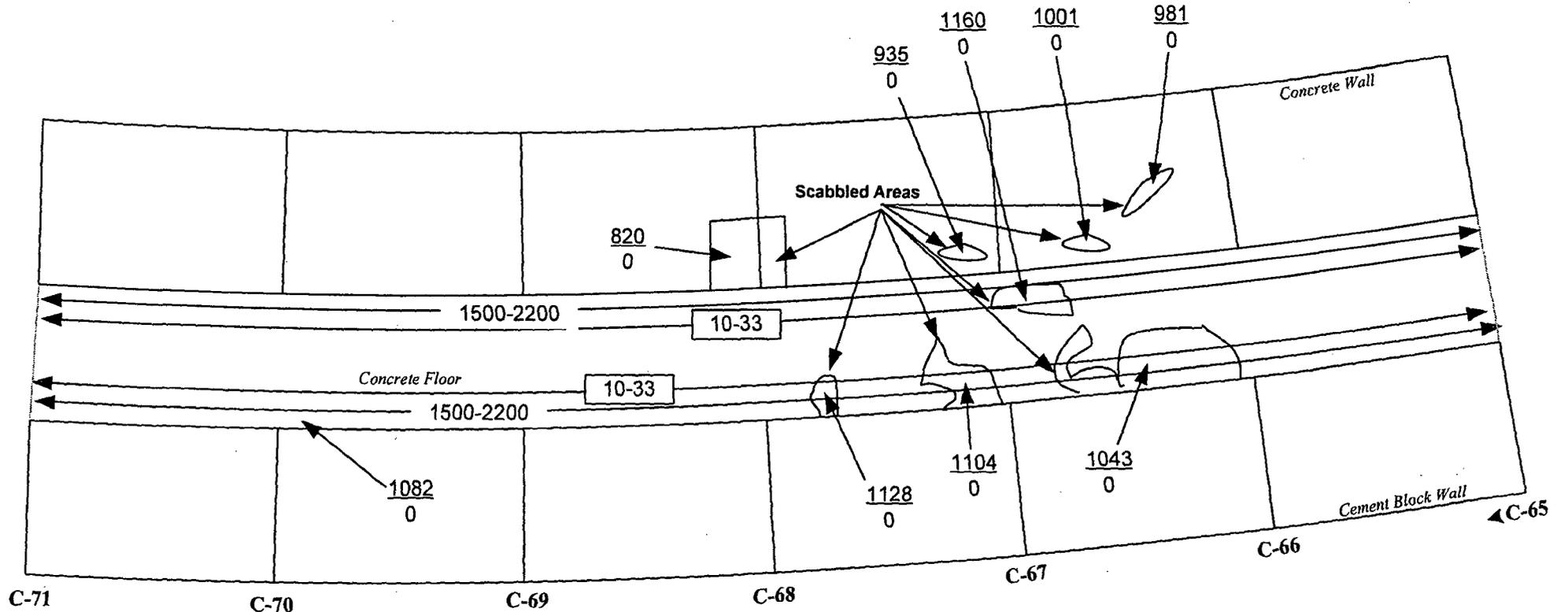
**LEGEND**

- ## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm
- # = Exposure Rate Surface Scan in  $\mu\text{R/hr}$
- (#) = Wipe Survey Location
- C# = Column Number

Note: all wipes were analyzed for  $\alpha$  and  $\beta$  activity, all results were at natural background levels.

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ / $\beta$ / $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan Dates: 10-08-04 to 11-12-04			

Figure 4a: Building 2 Service Corridor, Section C, Level 1, Column C-65 to C-71, Confirmatory Survey

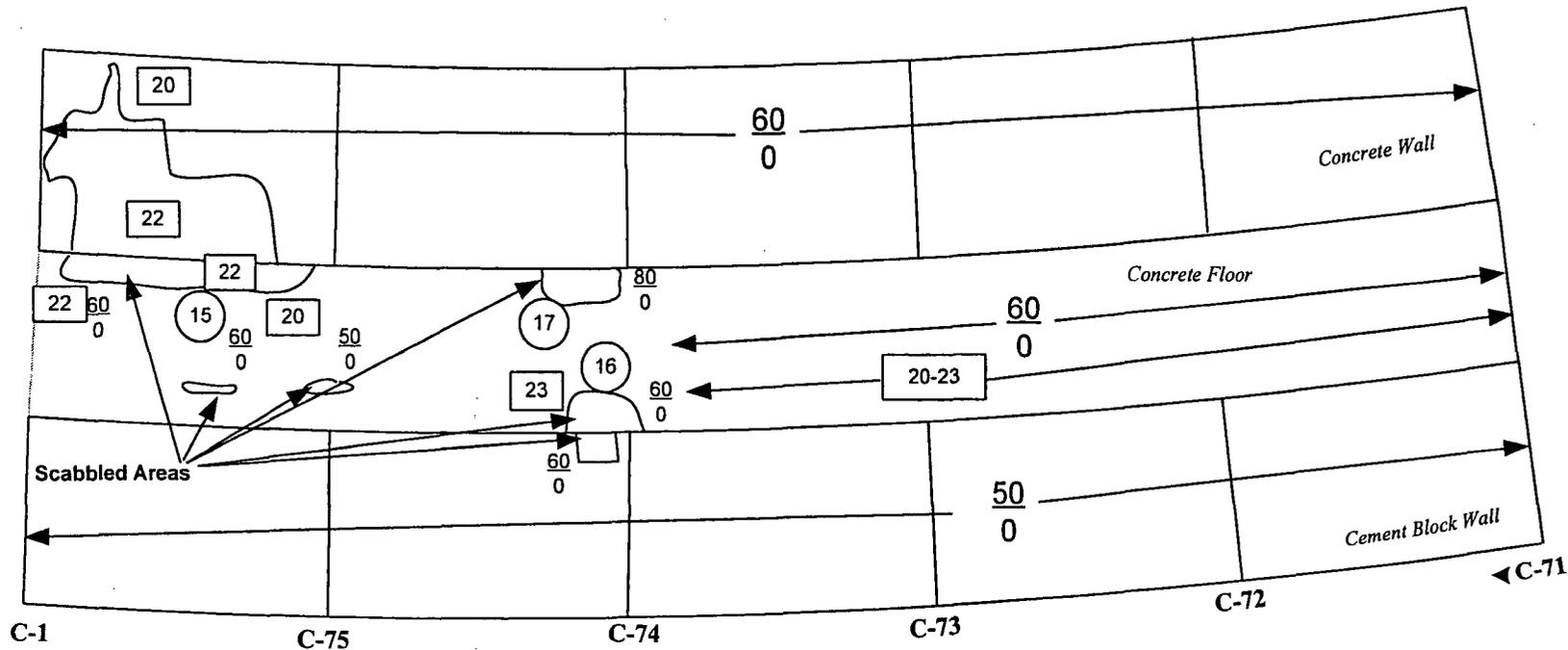


**LEGEND**

- ### =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Location	Building 2 Service Corridor				
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39%	34.36%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan		Dates: 03-20-06 to 03-23-06			

Figure 5: Building 2 Service Corridor, Section C, Level 1, Column C-71 to C-1, Confirmatory Survey



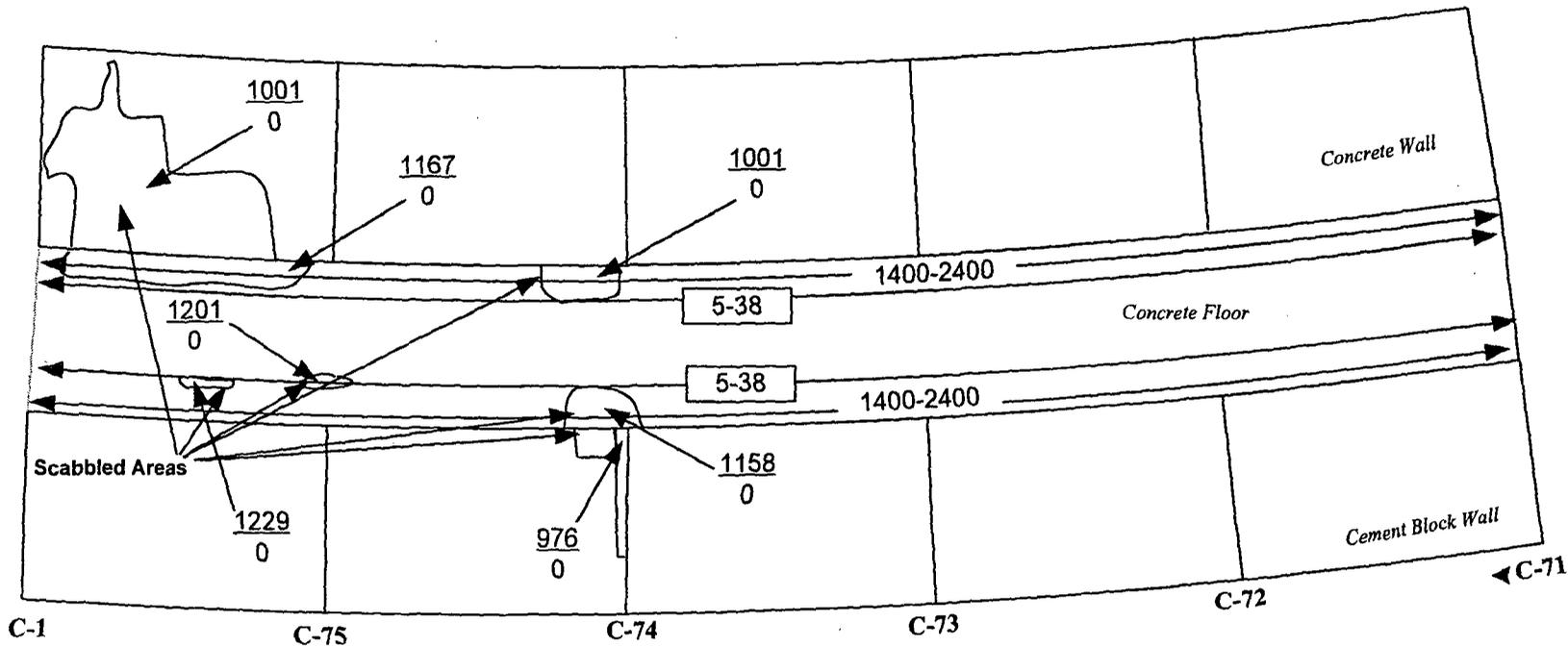
**LEGEND**

- ## =  $\beta$  Surface Scans in cpm
- ## =  $\alpha$  Surface Scans in cpm
- # = Exposure Rate Surface Scan in  $\mu$ R/hr
- (#) = Wipe Survey Location
- C# = Column Number

Note: all wipes were analyzed for  $\alpha$  and  $\beta$  activity, all results were at natural background levels.

Building 2 Service Corridor			
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ , $\beta$ , $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu$ R/hr
MDA In DPM/100 cm <sup>2</sup>	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 5a: Building 2 Service Corridor, Section C, Level 1, Column C-71 to C-1, Confirmatory Survey

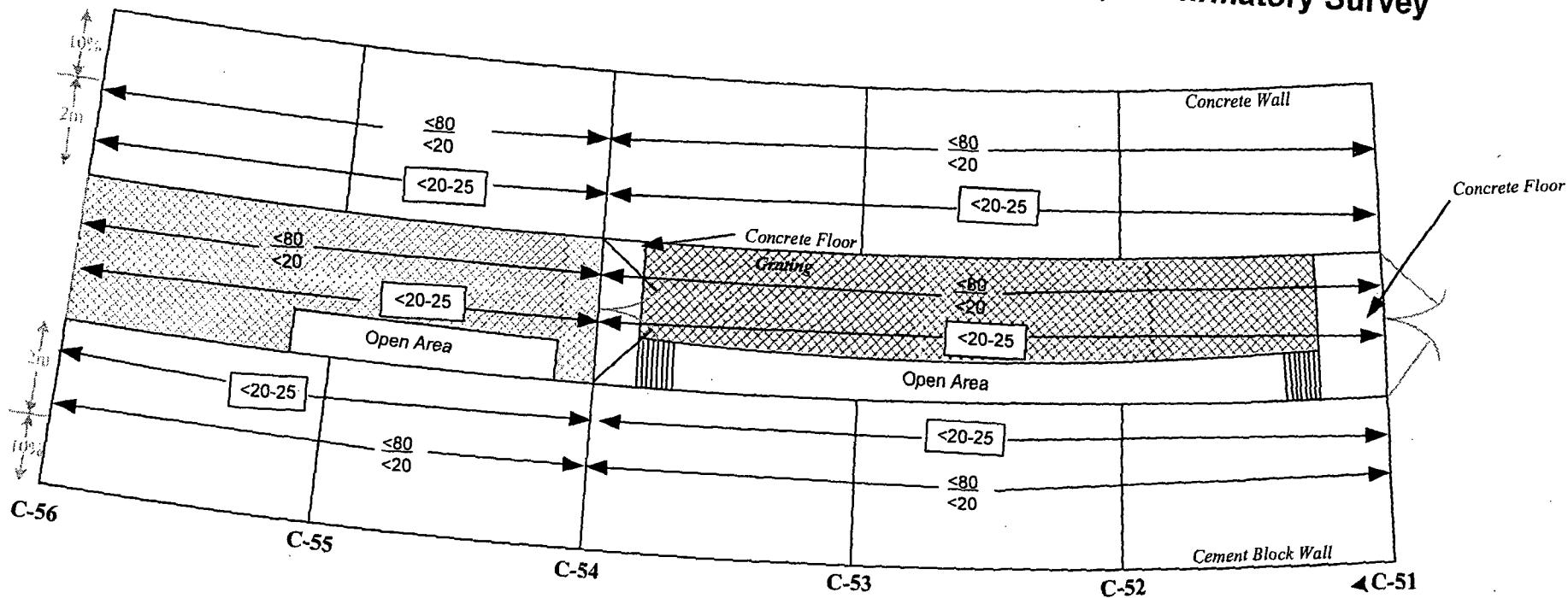


**LEGEND**

- ##-## =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Building 2 Service Corridor					
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
$\alpha$ %	22.19%	27.66%	22.14%	30.39 %	34.36 %
$\beta$ %					
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 6: Building 2 Service Corridor, Section C, Level 2, Column C-51 to C-56, Confirmatory Survey



**LEGEND**

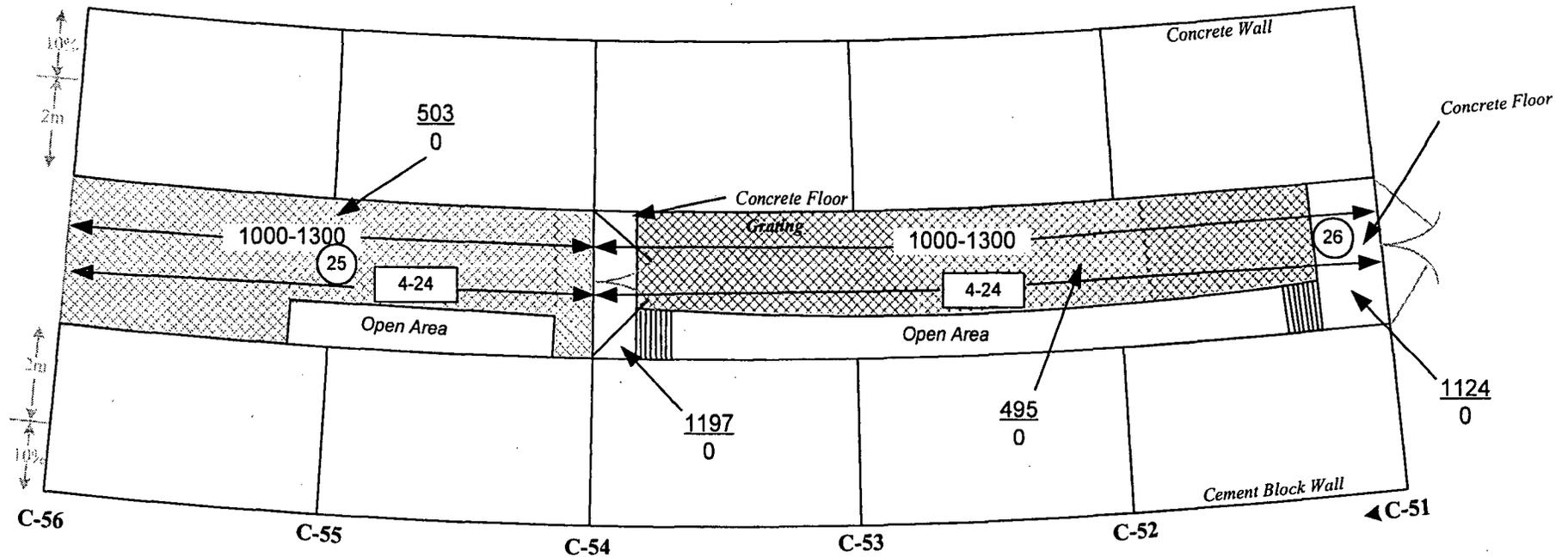
## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

C# = Column Number

Building 2 Service Corridor			
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 6a: Building 2 Service Corridor, Section C, Level 2, Column C-51 to C-56, Confirmatory Survey



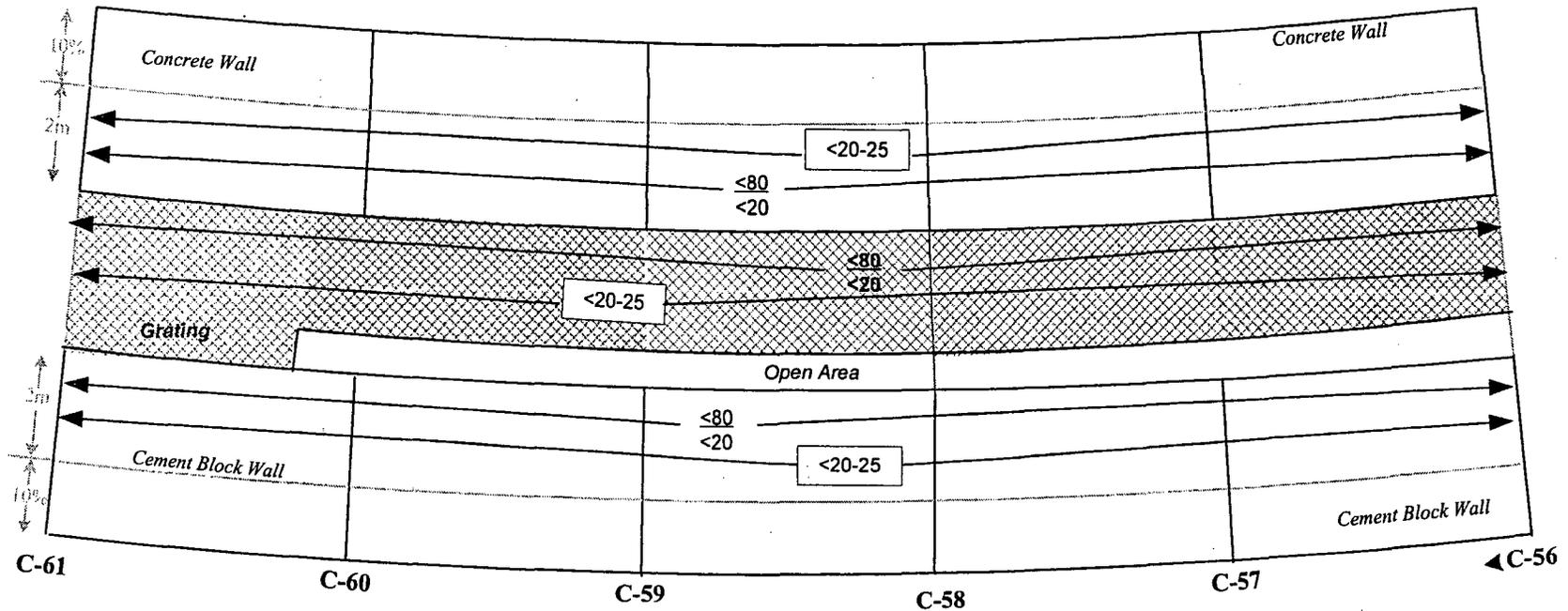
Note: All wipe samples were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $\text{cm}^2$

**LEGEND**

- ### =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- (#) = Wipe Sample Locations
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Location	Building 2 Service Corridor				
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39%	34.36%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	434 $\text{cm}^2$	434 $\text{cm}^2$	100 $\text{cm}^2$
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 $\text{cm}^2$	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 7: Building 2 Service Corridor, Section C, Level 2, Column C-56 to C-61, Confirmatory Survey



**LEGEND**

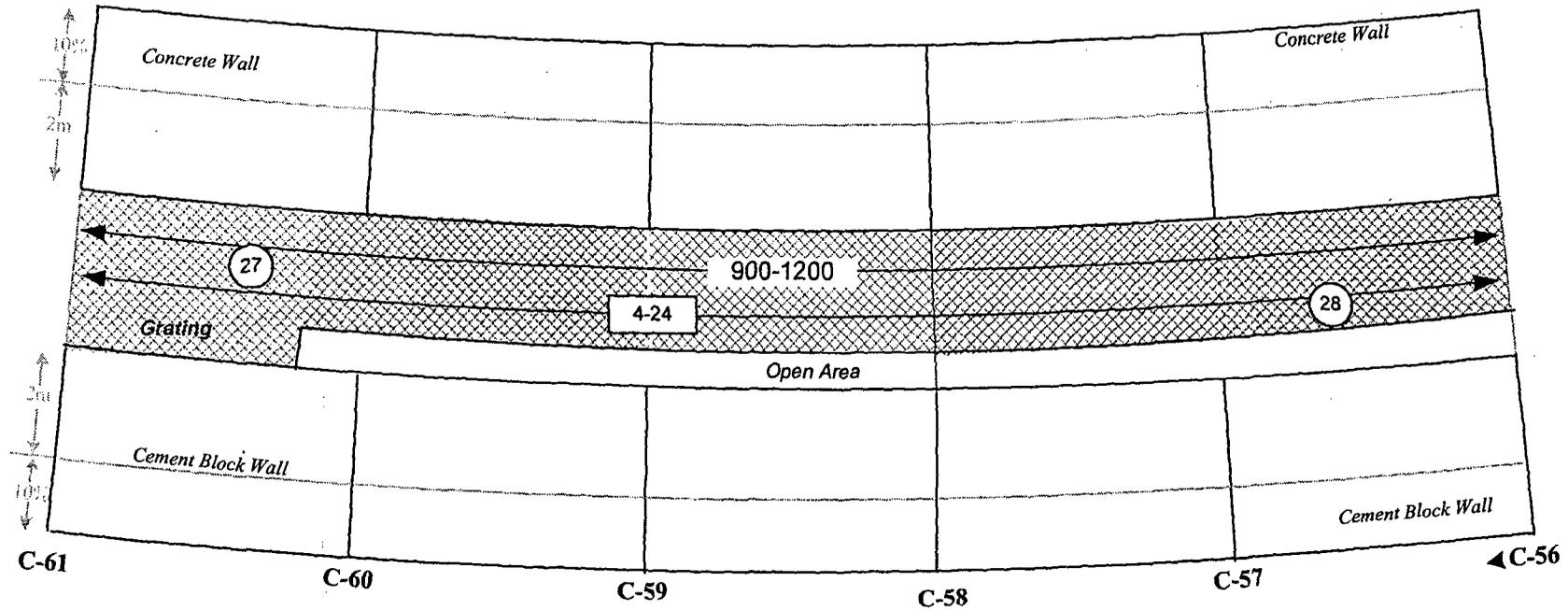
## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu R/hr$

C# = Column Number

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu R/hr$
MDA in DPM/100 cm <sup>2</sup>	312	2285	NA
Surveyors: B. Belcher/ S. Cowan Dates: 10-08-04 to 11-12-04			

Figure 7a: Building 2 Service Corridor, Section C, Level 2, Column C-56 to C-61, Confirmatory Survey



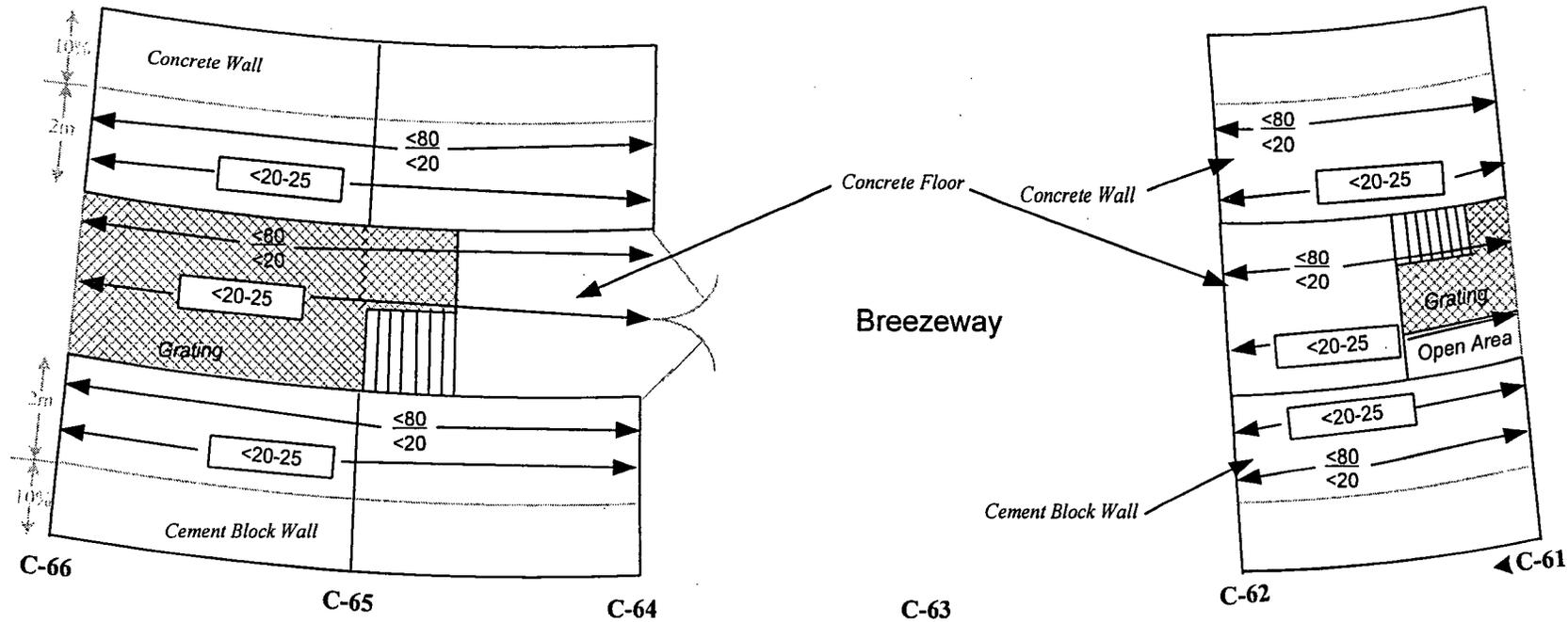
Note: All wipe samples were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $\text{cm}^2$

**LEGEND**

- ##-## =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- (#) = Wipe Sample Locations
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Building 2 Service Corridor					
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39 %	34.36 %
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	434 $\text{cm}^2$	434 $\text{cm}^2$	100 $\text{cm}^2$
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 $\text{cm}^2$	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 8: Building 2 Service Corridor, Section C, Level 2, Column C-61 to C-66, Confirmatory Survey



**LEGEND**

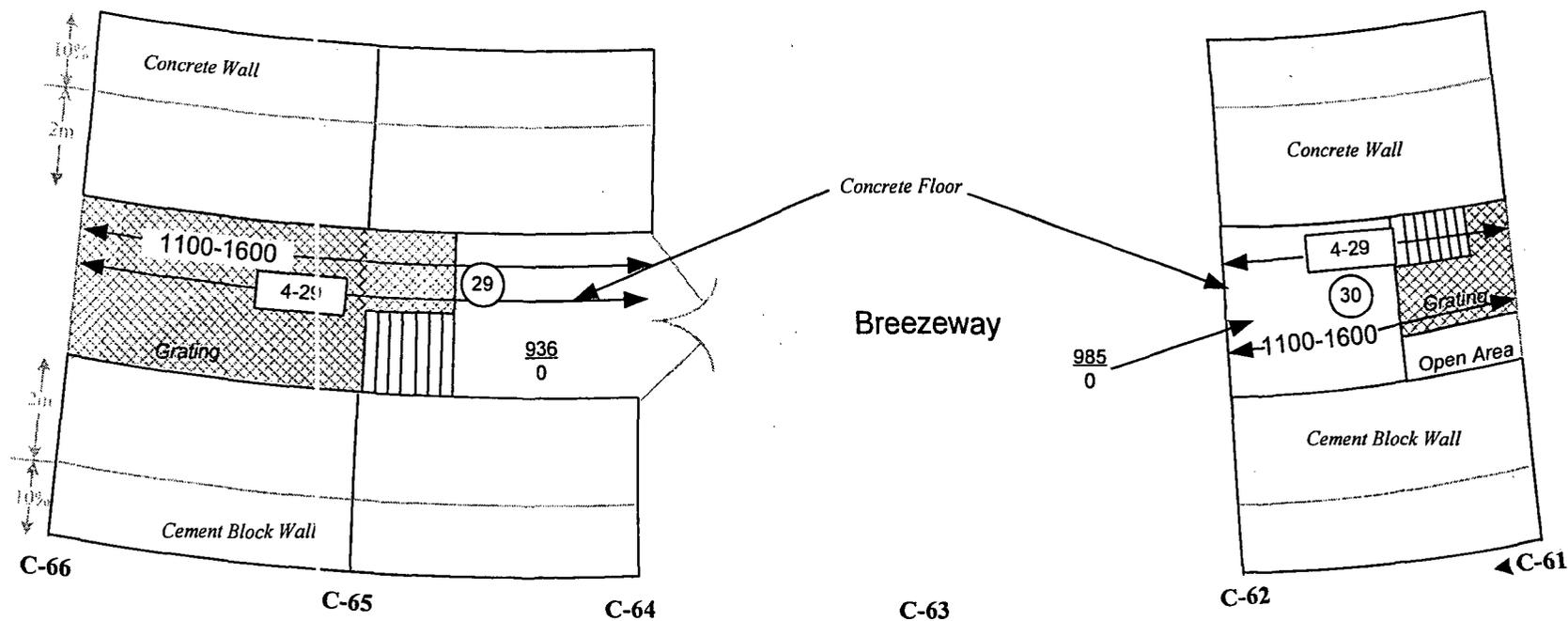
## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

C# = Column Number

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan Dates: 10-08-04 to 11-12-04			

Figure 8a: Building 2 Service Corridor, Section C, Level 2, Column C-61 to C-66, Confirmatory Survey



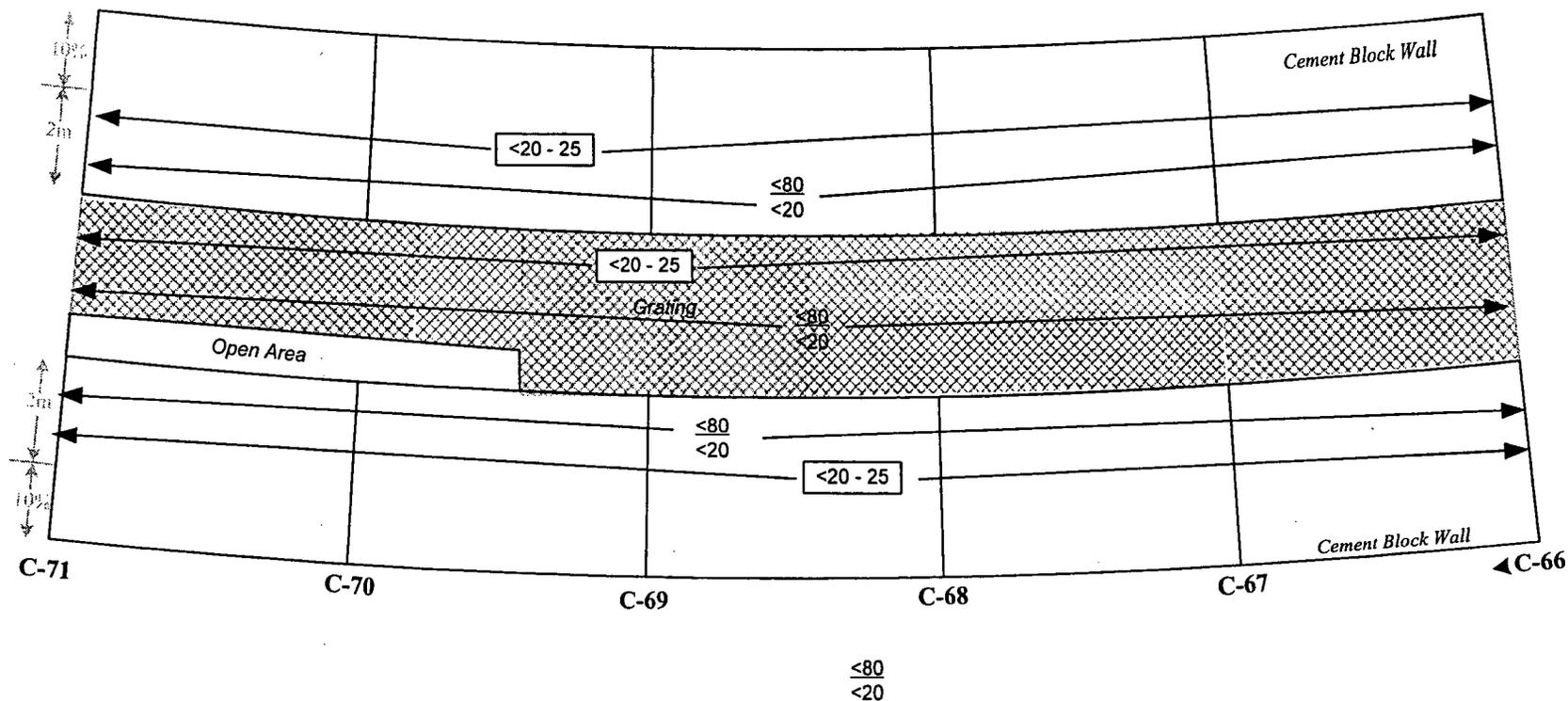
Note: All wipe samples were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100 cm<sup>2</sup>

**LEGEND**

- ##-## =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- (#) = Wipe Sample Locations
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Category	Building 2 Service Corridor				
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39%	34.36%
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan		Dates: 03-20-06 to 03-23-06			

Figure 9: Building 2 Service Corridor, Section C, Level 2, Column C-66 to C-71, Confirmatory Survey

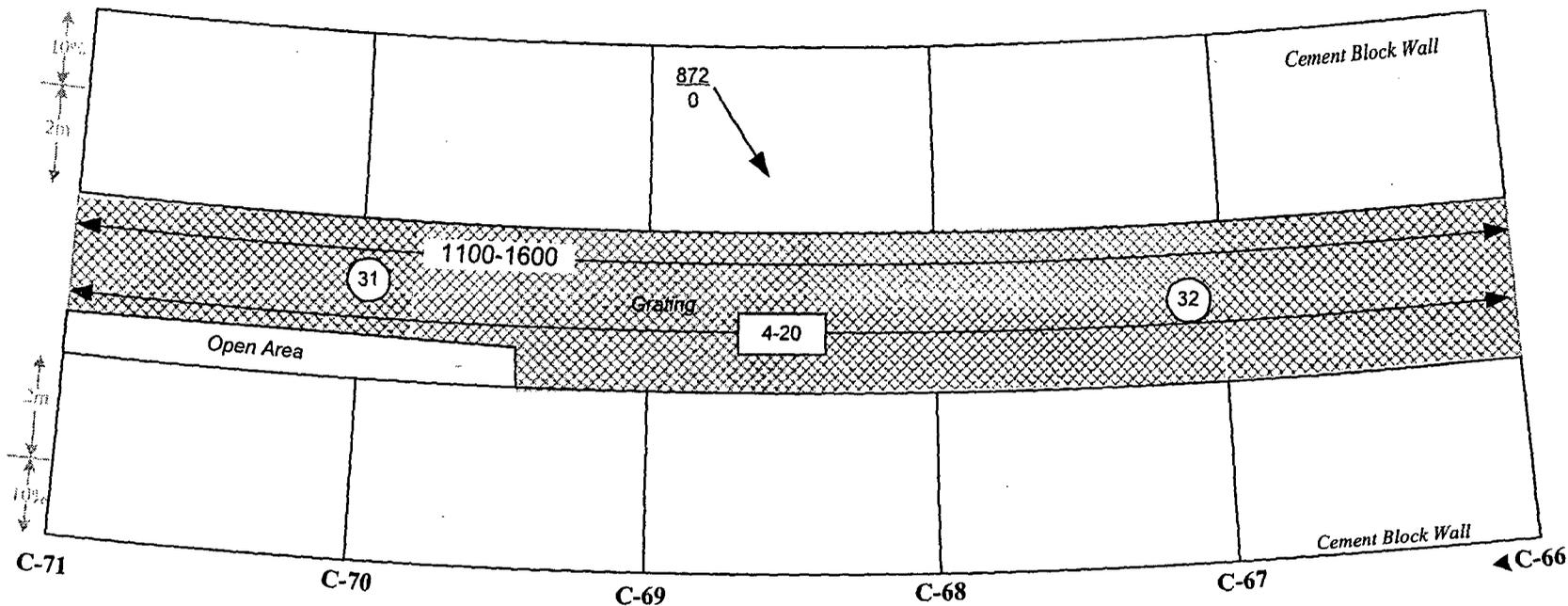


**LEGEND**

- ## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm
- ## = Exposure Rate Surface Scan in  $\mu\text{R/hr}$
- C# = Column Number

Location			
Building 2 Service Corridor			
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan Dates: 10-08-04 to 11-12-04			

Figure 9a: Building 2 Service Corridor, Section C, Level 2, Column C-66 to C-71, Confirmatory Survey



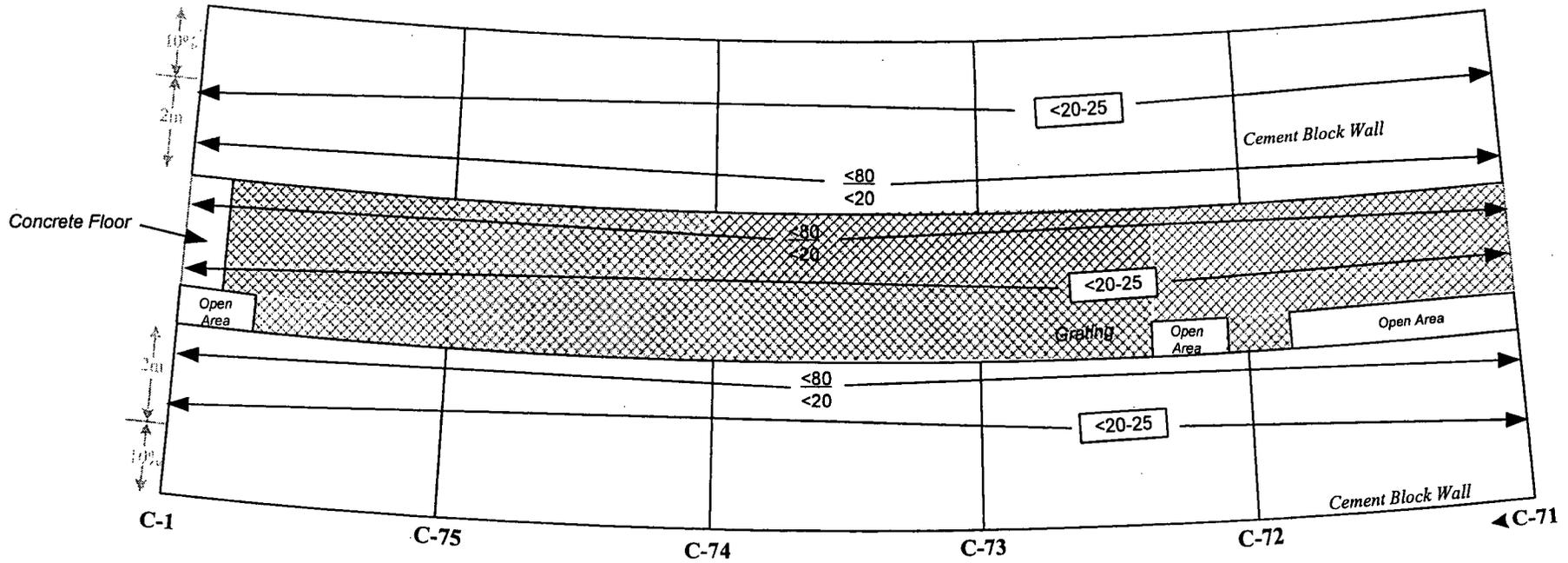
Note: All wipe samples were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $\text{cm}^2$

**LEGEND**

- ##-## =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- # = Wipe Sample Locations
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Building 2 Service Corridor					
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39 %	34.36 %
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	434 $\text{cm}^2$	434 $\text{cm}^2$	100 $\text{cm}^2$
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 $\text{cm}^2$	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 10: Building 2 Service Corridor, Section C, Level 2, Column C-71 to C-1, Confirmatory Survey



**LEGEND**

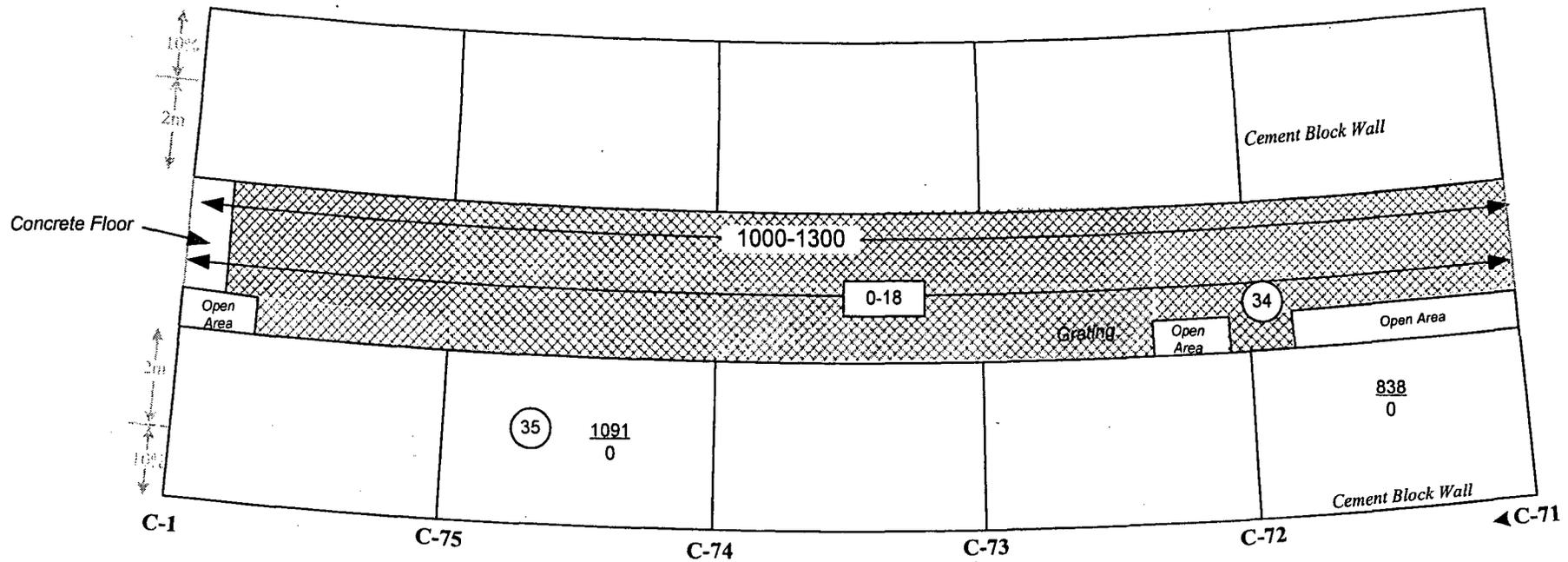
## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

C# = Column Number

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ / $\beta$ / $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40-80 cpm	20-25 $\mu\text{R/hr}$
MDA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan Dates: 10-08-04 to 11-12-04			

Figure 10a: Building 2 Service Corridor, Section C, Level 2, Column C-71 to C-1, Confirmatory Survey



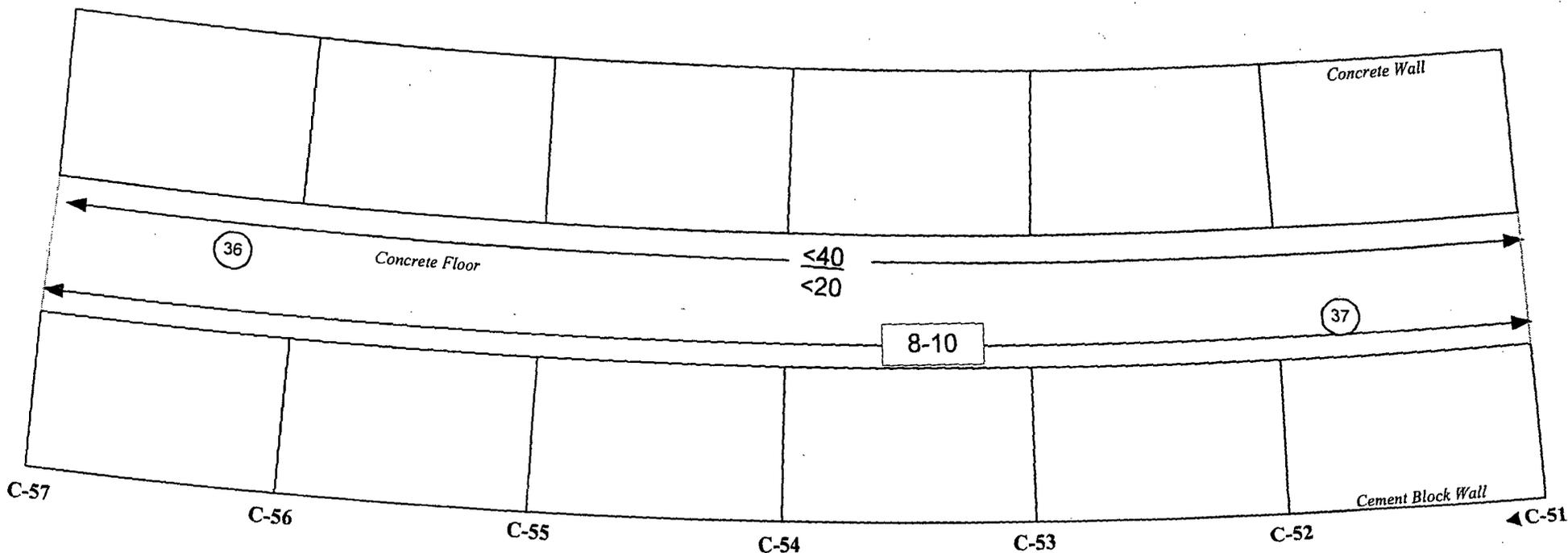
Note: All wipe samples were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100 cm<sup>2</sup>

**LEGEND**

- ### =  $\beta$  Surface Scan in cpm, 10% of surface
- # =  $\alpha$  Surface Scans in cpm, 10% of surface
- (#) = Wipe Sample Locations
- ## =  $\beta$  Fixed measurement in cp2m
- ## =  $\alpha$  Fixed measurement in cpm
- B# = Column Number

Location	Building 2 Service Corridor				
Instruments	Model 12	Model 3	Model 2221	Model 2221	Model 2221
Serial Number	91055	74220	84459	154202	86802
Calibration Due	09/07/06	04/13/06	05/15/06	09/21/06	05/15/06
	22.19%	27.66%	22.14%	30.39 %	34.36 %
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\beta$
Probe Number	092190	145973	086215	149017	142547
Probe Size cm <sup>2</sup>	50 cm <sup>2</sup>	15 cm <sup>2</sup>	434 cm <sup>2</sup>	434 cm <sup>2</sup>	100 cm <sup>2</sup>
Background	0-20 cpm	40-80 cpm	10-60 cpm	1300-2000 cpm	1026 cp2m
MDA in DPM/100 cm <sup>2</sup>	312	2285	109	375	287
Technician: S. Cowan			Dates: 03-20-06 to 03-23-06		

Figure 11: Building 2 Service Corridor, Section C, Level 3 (Crawl Space), Column C-51 to C-57, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

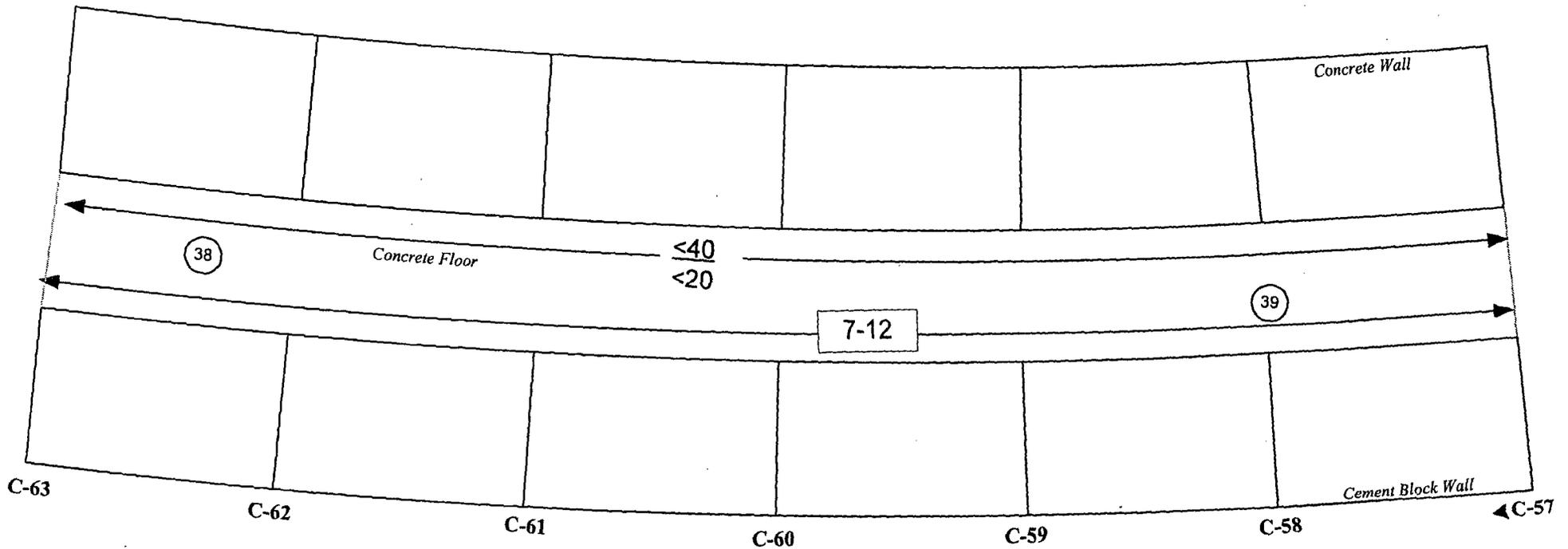
⊙ = Wipe Sample Locations

C# = Column Number

Note: All wipe samples, Taken on 03/20-23/06 by S. Cowan, were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $\text{cm}^2$

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
$\alpha$ $\beta$ $\gamma$	22.14%	29.18%	NA
	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40 cpm	8 $\mu\text{R/hr}$
MOA in DPM/100 $\text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 12: Building 2 Service Corridor, Section C, Level 3 (Crawl Space), Column C-57 to C-63, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu R/hr$

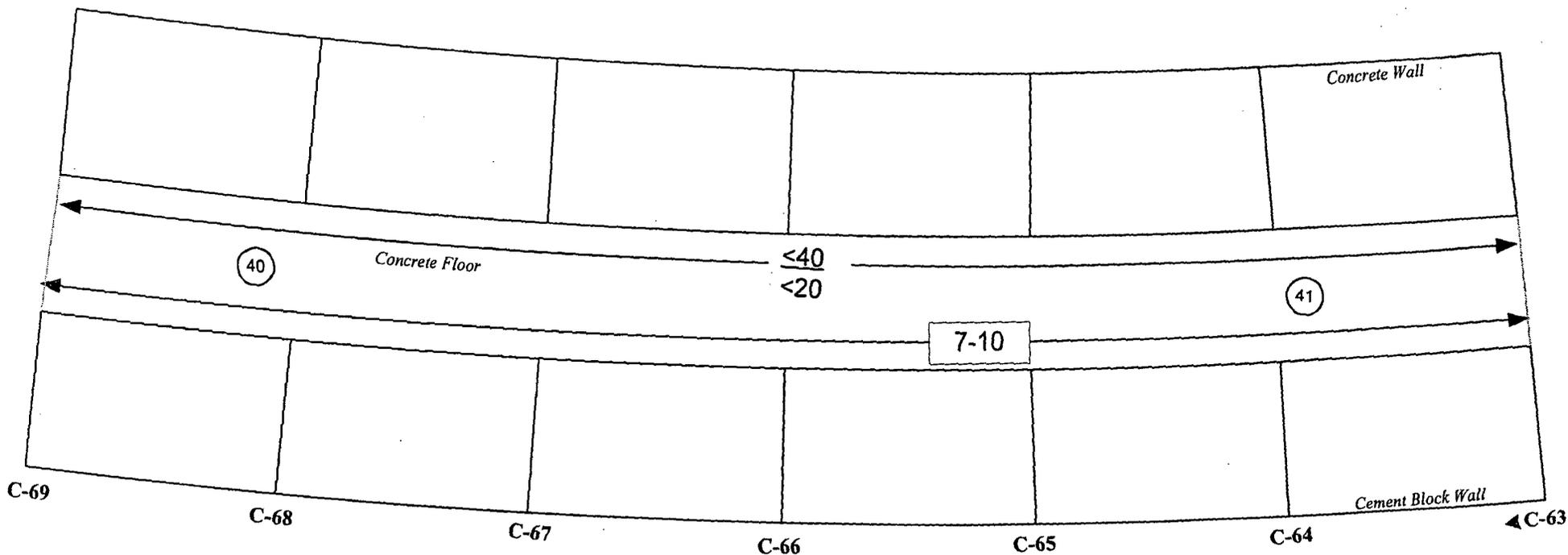
(#) = Wipe Sample Locations

C# = Column Number

Note: All wipe samples, Taken on 03/20-23/06 by S. Cowan, were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $cm^2$

Instrument	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
$\alpha$ , $\beta$ , $\gamma$	22.14%	29.18%	NA
	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $cm^2$	50 $cm^2$	15 $cm^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40 cpm	8 $\mu R/hr$
MDA in DPM/100 $cm^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 13: Building 2 Service Corridor, Section C, Level 3 (Crawl Space), Column C-63 to C-69, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu\text{R/hr}$

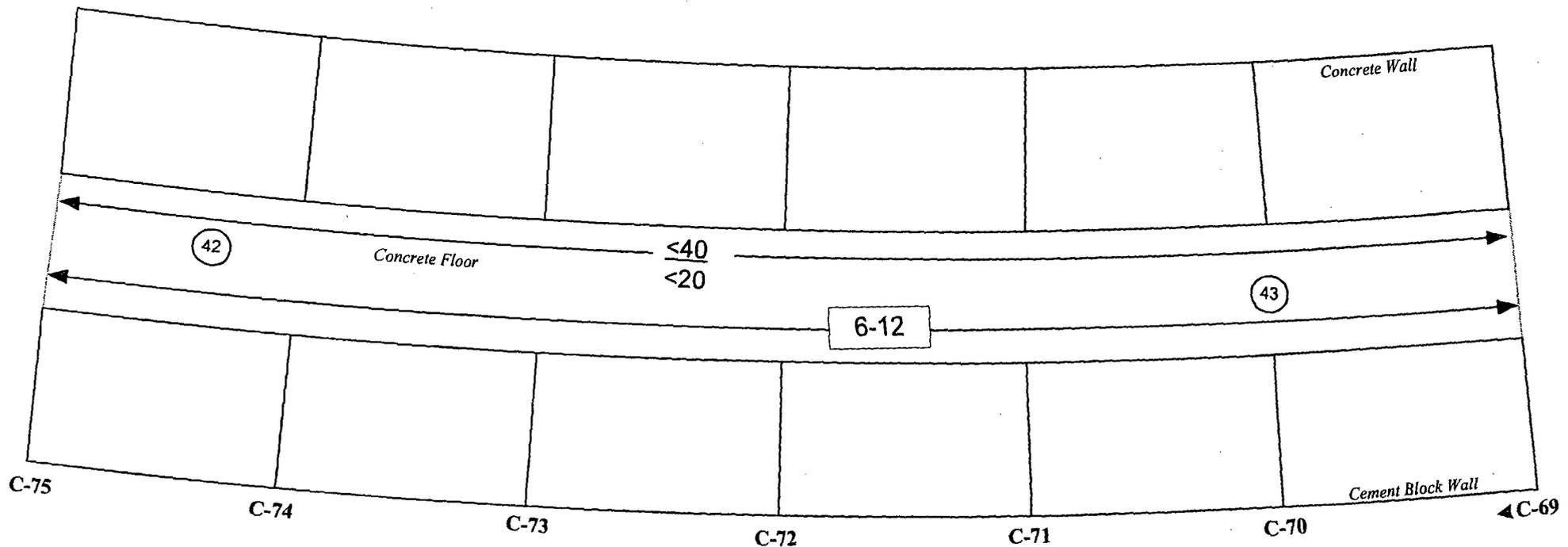
(#) = Wipe Sample Locations

C# = Column Number

Note: All wipe samples, Taken on 03/20-23/06 by S. Cowan, were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $\text{cm}^2$

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
$\alpha$ , $\beta$ , $\gamma$	22.14%	29.18%	NA
	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40 cpm	8 $\mu\text{R/hr}$
MDA in $\text{DPM}/100 \text{cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 14: Building 2 Service Corridor, Section C, Level 3 (Crawl Space), Column C-69 to C-75, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# Exposure Rate Surface Scan in  $\mu\text{R/hr}$

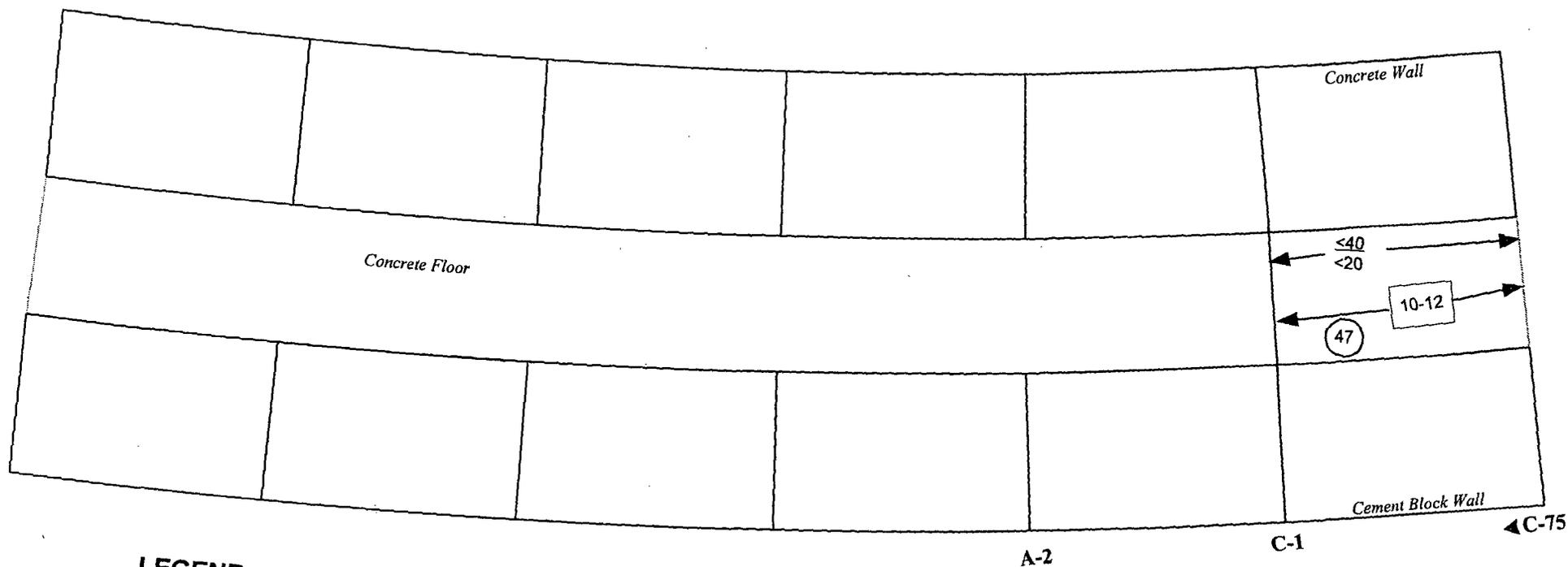
⊙ = Wipe Sample Locations

C# = Column Number

Note: All wipe samples, Taken on 03/20-23/06 by S. Cowan, were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $< 20 \text{ dpm}/100 \text{ cm}^2$

Building 2 Service Corridor			
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $\text{cm}^2$	50 $\text{cm}^2$	15 $\text{cm}^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40 cpm	8 $\mu\text{R/hr}$
MDA in $\text{DPM}/100 \text{ cm}^2$	312	2285	NA
Surveyors: B. Belcher/ S. Cowan			
Dates: 10-08-04 to 11-12-04			

Figure 15: Building 2 Service Corridor, Section C, Level 3 (Crawl Space), Column C-75 to C-1, Confirmatory Survey



**LEGEND**

## =  $\frac{\beta}{\alpha}$  Surface Scans in cpm

# = Exposure Rate Surface Scan in  $\mu R/hr$

(#) = Wipe Sample Locations

C# = Column Number

Note: All wipe samples, Taken on 03/20-23/06 by S. Cowan, were analyzed at the Health Physics Laboratory for  $\alpha$  and  $\beta$  activity. All results were  $<20$  dpm/100  $cm^2$

Location	Building 2 Service Corridor		
Instruments	Model 12	Model 3	Model 3
Serial Number	91055	143349	151348
Calibration Due	03/16/05	11/17/04, 05/19/05	02/05/05
	22.14%	29.18%	NA
$\alpha$ $\beta$ $\gamma$	$\alpha$	$\beta$	$\gamma$
Probe Number	092190	145967	163169
Probe Size $cm^2$	50 $cm^2$	15 $cm^2$	2" x 2" NaI (TI)
Background	0-20 cpm	40 cpm	8 $\mu R/hr$
MDA in DPM/100 $cm^2$	312	2285	NA